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FOREWORD

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

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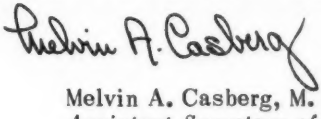
MONTHLY MESSAGE

With the cessation of hostilities in Korea it is appropriate that the medical services of the Armed Forces take inventory of the results of their efforts to salvage those injured by enemy action or disease. Statistical investigation reveals that never before in the history of warfare has a man wounded in combat found the odds so strongly in favor of his survival. The health professions of the Armed Forces may well be proud of this accomplishment.

Teamwork is a familiar slogan in the world of sports where the success of a particular competitive unit depends to a great degree on each player supporting the efforts of the team as a whole. For each man who scores and receives the plaudits of the crowds, there are many unsung heroes whose individual, unspectacular efforts make possible the success of their team. In a similar vein the artistic interpretation of an orchestral masterpiece is possible only through the cooperative efforts of musicians playing a variety of instruments with a wide multiplicity of tonal qualities blended into a single beautiful composition.

Credit for the medical successes in the Korean episode goes to the entire Armed Forces health team, composed of a wide variety of personnel with an equally wide range of responsibilities. Certainly the contributions of the "medic" or aid-man in the combat zone is a saga of heroism. Following the injured patient through the chain of evacuation, assisting the doctors are a host of personnel including the nurses, the Medical Service Corps, the hospital technicians, and many other sustaining elements. To this team our nation owes an undying debt of gratitude.



Melvin A. Casberg, M. D.
Assistant Secretary of Defense
(Health and Medical)

A TRIBUTE TO THE ARMED FORCES INSTITUTE OF PATHOLOGY

MELVIN A. CASBERG, *M. D.*
Assistant Secretary of Defense

WE are here today to take part in laying the cornerstone of this new building, unique both in function and structure. This is a milestone in the advance of medicine and I am grateful of the honor of speaking on such a significant occasion. As we gather in the shadow of this modern edifice some may measure its greatness in terms of concrete tonnage or the dollar cost per square foot, but I choose to measure it in terms which do not lend themselves readily to the computations of an adding machine—namely, by the countless number of human lives saved and by the suffering and misery alleviated.

MUSEUM FOUNDED DURING CIVIL WAR

This great new Armed Forces Institute of Pathology is the culmination of the dreams of a host of distinguished men of American medicine. The Armed Forces Institute of Pathology had its origin in the Army Medical Museum, which was founded during the Civil War by the imaginative and venturous Surgeon General, William A. Hammond. General Hammond envisioned a pathology laboratory, a medical school, and a permanent hospital, all joining in the task of training medical officers. His dream will soon be fulfilled.

John H. Brinton, the first Curator of the Museum, began the task of collecting battlefield specimens suitable for teaching purposes. Working with him were Joseph J. Woodward and George A. Otis, and out of their efforts came the monumental work "The Medical and Surgical History of the War of the Rebellion." As many of you know, this was not only a historical document, but also a teaching reference for years afterward. The father of pathology, Rudolph Virchow, had this to say in 1874: "Whoever

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Address delivered at the cornerstone-laying ceremony of the new building of the Armed Forces Institute of Pathology, Washington, D. C., 20 October 1953.

Dr. Melvin A. Casberg, Assistant Secretary of Defense (Health and Medical), is shown addressing the assembled guests who attended the cornerstone-laying ceremony of the new building of the Armed Forces Institute of Pathology at Walter Reed Army Medical Center on 20 October 1953. Seated on the platform, from left to right: Major General Harry G. Armstrong, Surgeon General, U. S. Air Force; Rear Admiral Lamont Pugh, Surgeon General, U. S. Navy; Major General George E. Armstrong, Surgeon General, U. S. Army; Dr. Chester S. Keefer, Special Assistant to the Secretary of Health, Education and Welfare (partially hidden by stand for microphone); Mr. Fred A. McNamara, in charge of the hospital programs, Bureau of the Budget; Brigadier General Elbert DeCoursey, MC, USA, Director of the Institute of Pathology; Major General Leonard D. Heaton, MC, USA, Commanding General, Walter Reed Army Medical Center; and Brigadier General Raymond O. Dart, USA (Ret.), first director of the unified Institute. At the right, in the second row, are Vice Admiral Joel T. Boone, USN (Ret.), Chief Medical Director, Veterans Administration, and Dr. Palmer W. Dearing, Deputy Surgeon General, U. S. Public Health Service.

takes in hand and examines these comprehensive publications will continually have his astonishment excited anew by the riches of the experience, purchased at so great a price, which is there recorded."

With me here on the platform this morning are four of the former curators and directors of this institution. Gentlemen, we are indeed honored that you could be here with us today. The removal of the Armed Forces Institute of Pathology from the old red brick building at 7th Street and Independence Avenue to this new setting must stir many vivid reflections in your minds. That old building was a rambling, drafty structure with fireplaces surrounded by mohair armchairs in which one could sit and reflect. The place has retained to this day that rare quality known as atmosphere, an attribute often associated with scientific pursuits. That red brick building was designed by Colonel John Shaw Billings who was curator of the Museum and director of the Army Medical Library at the same time. Because of his professional prestige, influence, and foresight, Billings did much to obtain the close co-operation of these military establishments with the medical schools of our country and other scientific institutions. It was in that same building on the Mall that Major Walter Reed completed his work on typhoid fever. There, he and Major James Carroll formulated plans for the famous yellow fever studies.

The Museum's role was recognized a few years before the turn of the century by the establishment within its walls of the Army Medical School. In 1910 the school was moved, ultimately arriving on these grounds in a nearby building. The re-establishment here, in close proximity, of the school and this institute will soon be realized.

In World War I there was a resurgence of activity at the Museum because of such men as Wilson, Herrick, Cattell, Lewis, Craig, and others. Doctor James Ewing was one of the consultants at that time and great strides were made in developing the graphic principles of medical illustration.

REGISTRIES OF PATHOLOGY ESTABLISHED

Brigadier General George R. Callender initiated the more recent era of this institution when he became curator in 1920. His scientific contributions in the study of ballistics, gas gangrene, respiratory disease, and other fields are well known to the profession. Through his efforts the original registries of pathology were established for the mutual benefit of civilian and military pathologists in their study of disease. His successor, Colonel James E. Ash, following these precepts, was able to expand the registries to more than a dozen during his tour as curator of

are Vice Admiral Joel T. Boone, USN (Ret.), Chief Medical Director, Veterans Administration, and Dr. Parran, Surgeon General, U. S. Public Health Service.

the Museum. Colonel Ash continued to direct the institution throughout World War II, the period of its most marked growth. His wisdom and quiet example endeared him to the entire medical profession and the same qualities were reflected in the many scientific contributions of his staff during that conflict.

For more than 20 years, curators and friends of the Museum have striven for more adequate quarters. This need for expansion had become critical by the end of the war, for by that time as many as 5,000 specimens were arriving each month. It was on such a scene that Brigadier General Raymond O. Dart arrived as director. The National Research Council, which had offered advice and counsel during the war years, was asked to determine the needs and suggest a solution for what appeared to the Army to be a vital part of medical progress. This group of leaders of American medicine readily acknowledged the essential role of the Museum and the necessity for greatly improved facilities.

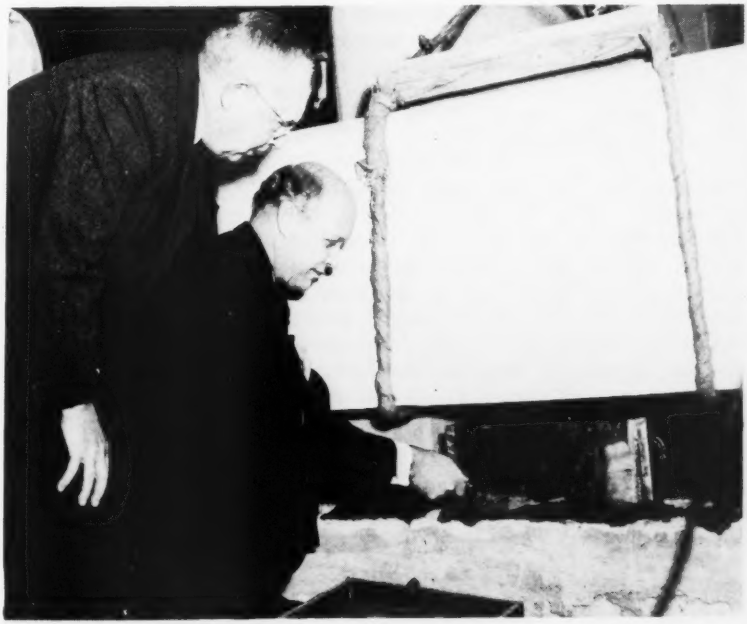
RENAMED ARMY INSTITUTE OF PATHOLOGY

In recognition of its continuing contribution and future promise, the Medical Museum was redesignated the Army Institute of Pathology. The former name was retained for that portion of the institute continuing strict museum function. A scientific advisory board of civilian authorities in the medical sciences was then formed. With the support of this group and the National Research Council, plans for the new building began to emerge. Next, the Army Institute of Pathology was designated the central pathology laboratory for the rapidly expanding medical program of the Veterans Administration. This enlarged its responsibilities immeasurably, but was necessary in providing the best medical care to our youth who were serving or had served our country. The Hawley Board and the Hoover Commission recognized the institution's special role, and saw the importance and need for further expansion and autonomy. As a result, the Armed Forces Institute of Pathology was created as a unified structure within the Department of Defense. It is now guided by a board of governors consisting of the Surgeons General of the Army, Navy, and Air Force with the advice and assistance of the scientific advisory board.

DEDICATED TO SERVICE OF HUMANITY

It seems fitting to me that the first permanent structure to be erected by the unified Armed Forces was not an arsenal or a factory for tanks, airplanes, or battleships. Instead, we have this institute which is useful in peace as well as war, and which is dedicated to the advancement of science in the service of humanity.

This, then, is the cornerstone of American medicine of today, representing the united aims and efforts of civilian physicians as well as those in the Armed Forces. This is the Armed Forces Institute of Pathology, devoted to the study of disease, which is so ably directed by Brigadier General Elbert DeCoursey of the Army, with the assistance of Colonel Ralph N. Thompson of the Air Force, Captain William M. Silliphant of the Navy, and the advisory board of members of the civilian medical profession.



Dr. Casberg, shown with General Dart, uses a trowel made from parts of an early microscope in the cornerstone laying of the Armed Forces Institute of Pathology. The sealed metal receptacle contains microfilms of significant historical documents of the institute and tissue specimens from the Civil War and World War II.

Now that we have traced its growth, how can we summarize the activities and service of this institution? I have attempted to group them under only three headings, realizing that this may be oversimplification. These are (1) consultation and diagnostic service, (2) teaching, and (3) investigation.

CONSULTATION AND DIAGNOSTIC SERVICE

Let me illustrate how the consultation and diagnostic service has benefited our Armed Forces. A young soldier in one of our Southern camps reported to the dispensary because of a growth

which had developed in his right eye. A malignant tumor was suspected and immediate removal of the eye seemed necessary. As a preliminary step, however, a fragment of the tumor was removed and after it had been examined by the local pathologist it was sent by airmail special delivery to the Armed Forces Institute of Pathology for an opinion as to diagnosis. The reply was received by radiogram that this was a benign tumor. The soldier still has both eyes.

Consultation afforded to the individual pathologist is possible because of the relative abundance of material on hand regarding even the most exotic and rare conditions. As Doctor Arnold Rich of Johns Hopkins University has remarked: "If a professor of pathology has one example of an unusual condition to study, he can go to the Armed Forces Institute of Pathology and there study a hundred."

In addition to individual consultation the members of this institution study and offer advice to our Surgeons General in many instances; for example, in the Southwest Pacific in World War II rumors became rife of possible permanent damage and even death being caused by atabrine, the drug that was used for prevention of malaria. A careful evaluation was made and the resulting conclusions were forwarded to the Surgeon General of the Army. In turn the theater surgeon could reassure the soldiers, sailors, and marines on the fallacy of this rumor and emphasize the relative importance to the troops of protection against malaria.

During the past world war this institution became a global clearing house for medical problems requiring studies in pathology. The lines of its activity literally ran to the four corners of the world. The inflow during 1944 amounted to an average daily reception of material from 15 autopsies and 60 surgical specimens. Problems studied ranged in content and geographic distribution from coccidioidomycosis in our western states to schistosomiasis in North Africa, from filariasis in the islands of the Pacific to scrub typhus in Burma. At the present time 20,000 autopsy and 50,000 surgical specimens are received over a period of one year.

TEACHING MATERIALS SHARED

The Armed Forces Institute of Pathology has been equally concerned with its responsibilities of teaching. Graduate training in pathology is provided officers of the Armed Forces and civilian physicians. Films on various aspects of pathology are supplied to medical schools and medical societies, and study sets of microscopic slides are sent to any qualified physician who requests them. Atlases of pathology have been prepared and are widely distributed. Tissues from exotic diseases are shared

with teaching institutions the world over. For example, in the past few weeks sections of the brain from a rare case of salivary gland virus encephalitis were supplied to pathologists in this country and in England, Germany, and Austria. Valuable specimens have also come in the reverse direction, enabling the Armed Forces Institute of Pathology to open a separate section of geographic pathology. Thus, in this one central location, one may now study diseases peculiar to remote areas of the world. The importance of such knowledge not only to our Armed Forces but also to any who may be called on to serve abroad is obvious.

RESEARCH ACTIVITIES

The research activities of the Armed Forces Institute of Pathology have kept pace with its other endeavors. The explosions at Hiroshima and Nagasaki opened an entirely new field of human and comparative pathology. Much of this material has been studied at the Institute and is available there for continued investigation. The same is true for epidemic hemorrhagic fever which caused such consternation when it broke out among American soldiers on the Korean battlefront three years ago. Some of the basic problems in the design of body armor for our troops in Korea were given to the Institute to solve. Many of the accomplishments in the field of research are due to the efforts of the band of consultants, who take time off from their university duties to share their knowledge with members of the staff.

We are honored this morning by the presence of many distinguished representatives of our federal government and our civilian medical profession, mute evidence of a basic interest in the health of our nation. Some may have considered the Armed Forces Institute of Pathology as a repository of museum specimens and tissues dusty with age, specimens deposited to satisfy the morbid curiosity of the visiting populace. Nothing could be further from the truth, for housed within the walls of this institution are the scientific keys which have and will continue to unlock the secrets of disease. Here is demonstrated the close collaboration between Armed Forces and civilian medicine, a joint effort so smoothly woven that the identity of individual civilian and military threads are lost in the warp and woof of the composite product. We recognize the necessity for continued union of investigative thought for only by such combined scientific endeavor can we conserve our freedom.

ALLEVIATION OF SUFFERING

The custom of consecrating buildings and foundations is not a new one for history is replete with records of such functions. As far back as the early Egyptian dynasties, certain ancient temples built along the Nile contained engravings on stone designating the builder and describing the tools and material

of construction. Many such ancient customs included sacrificial aspects, both animal and human, motivated by the fear of jealous spirits and gods. Far removed from the element of fear and propitiation this function today is one of dedication, a dedication to the alleviation of human suffering.

As I spread the mortar which will unite the cornerstone with this building, it shall be my prayer that all our medical resources, civilian as well as military, similarly shall be cemented in a united fight against disease and for the preservation of our country.

NAVAL DENTAL TRAINING FILM WINS AWARD

The Bureau of Medicine and Surgery has received notification that the naval dental training film "Periodontia," entered in competition with other films on parodontology at the thirteenth Congress of the International Association for the Research on Parodontopathies, which was held in Geneva, Switzerland in July, won a Bronze Medal Award. This is the third naval dental training film to win an international award.

MILITARY OPHTHALMOLOGISTS ELECT NEW OFFICERS

Captain Fred Harbert, MC, USN, U. S. Naval Hospital, Philadelphia, Pa., was elected president of the Society of Military Ophthalmologists at the annual meeting at the Palmer House in Chicago on 13 October 1953. Other new officers chosen for the coming years were: Colonel Arnold A. Albright, MC, USA, first vice president; Colonel Richard S. Fixott, USAF (MC), second vice president; Colonel John H. King, Jr., MC, USA, secretary-treasurer; and Brigadier General Earl Maxwell, USAF (MC), and Lieutenant Colonel Horace W. Shreck, MC, USA, members of the board of governors.

The present day methods for evaluating outcome of therapy in mental disorders leave much to be desired. The first difficulty comes from the fact that the data usually reported are not satisfactory for evaluation. The second essential difficulty arises from the fact that a given therapy may not be suitable for one patient but be suitable for another. Prognostic tests are needed for forecasting the type of therapy most suitable for a given patient.

—JOSEPH ZUBIN
in *Journal of Nervous and Mental Disease*

REHABILITATION OF MEDICAL EDUCATION IN SOUTH KOREA

BYRON L. STEGER, *Colonel, MC, USA*
FRANK D. McCREARY, *Lieutenant Colonel, MC, USA*
MARLO E. SMITH, *Major, MSC, USA*

A heart-warming rebirth of medical education in South Korea is in progress after a two-year period of stagnation. In times of conflict such as that in Korea, education is one of the first casualties. While the medical schools were forced to close, the war simultaneously intensified the need for professional medical and allied science personnel of all kinds. To supply medical personnel for the Republic of Korea (ROK) armed forces, and equally important, to train personnel to meet the desperate needs for medical care and public health of the civilian populace, the schools have been reopened.

Reports[1] indicate there were 2,200 physicians in the ROK military services by December 1952. Until recently, civilian physicians under the age of 38 years were called into military service by ROK draft laws for 30 days of training; this has now been increased to 60 days. Less than 800 qualified physicians remained in private practice, and they were concentrated in and around the major cities. Rural areas were not properly covered. Five hundred and twenty-nine dispensaries and 109 hospitals provided the bulk of the medical care throughout the country. Over 90 percent of the recent medical school graduates were drafted into the military services.

According to the ROK Ministry of Health,[2] the census of doctors in South Korea in January 1953 was as follows:

ROKA (medical doctors* and "qualified" doctors**)	2,200
Government officials and schools (* and **)	320
In public hospitals, dispensaries, prisons, and VD clinics (* and **)	1,374
Private practice (* and ** and limited doctors***)	1,213

From Office of Surgeon, Headquarters, Korean Communications Zone. Col. Steger is now at the Army War College, Carlisle, Pa.

Out of the country	130
Total	5,237

*Medical doctors are graduates of approved medical schools.

**Examination or "qualified" doctors are those who have attended a year or more of college or medical school. They must pass a government examination.

***Limited area doctors are at least high school graduates; have attended medical school; usually apprenticed and self-educated and have passed a government examination. They are authorized to practice medicine within restricted geographic areas where there are no regular physicians or where these are inadequate in number.

Herb Doctors

There are also about 5,000 herb doctors ("herbalists") who practice an art of Chinese healing, called "Han-ei." There are no schools for these and the art of diagnosis and treatment has been passed down from teacher to assistant for 50 centuries. This art is based on the fundamental principles of "Yang" (positive) and "Um" (negative) theory. So long as the positive and negative factors are in balance, the individual is well. If they are out of balance, he is sick.

The Han-ei doctor, whose diagnosis is based on philosophic observations and analyses, explains the cause of all ailments and determines the treatment therefor by this positive and negative theory plus palpation of the radial pulse, of which the Han-ei claim there are 38 different varieties. Each variety, it is claimed, is recognized and evaluated by the Han-ei practitioner in the practice of his art. Both diagnosis and treatment are reported to be crude and unscientific and greatly influenced by superstition. Nevertheless, Han-ei is still reported as being very popular with the general Korean public and more patients are treated by Han-ei practitioners than by all other doctors combined. This information is presented to illustrate the desperate need for proper medical education in Korea now and in the years to come.

Prewar School System

Korea had an excellent school system before the war and the literacy rate was high at all economic levels.[3] The Japanese, who occupied the nation from 1910 to 1945, encouraged education and had built up an educational physical plant that ranked high in the Orient. Besides several dental, nursing, veterinary, and pharmacy schools, there were six recognized medical schools in prewar South Korea:

1. Seoul National University, founded in 1924 by the Japanese and operated by the government. Reborn in August 1946 with nine colleges by Allied Military Government. In September 1950 the tenth college (Seoul College of Pharmacy, a private institution) was added by affiliation.

2. Severance Union Medical School in Seoul, under missionary control. Founded in 1893 by a Presbyterian missionary whose name it bears. This institution first introduced western medicine to Korea.

3. Seoul Women's Medical College, a private institution, is now operating temporarily in Pusan.

4. Medical College of Ewha University in Seoul, operated by missionaries, is also temporarily located in Pusan.

5. Taegu Medical College, founded in 1923 in Taegu by the Japanese and operated by the government.

6. Kwangju Medical College in Kwangju, founded in 1943 by the Japanese, is operated by the government.

The prewar enrollment of these schools was about 2,000 students, of which 370 were women. The largest number (about 500) was enrolled in the School of Medicine of Seoul National University, which is reported to have been the most important school of the six.[4] It was the only school which had been given university rank and its medical college was claimed to compare favorably with medical schools in other countries.[5] This school and the Severance Union Medical School were well organized and equipped to provide good 4-year medical education. Prior to 1947, Seoul National University Medical College was the only one that required two years of premedical training. Since that time, all of the medical schools require two years of premedical college education.

Two Major Upheavals

Even before the Korean conflict the operation of a medical school was difficult in Korea and was complicated by distressing chronic shortages or faculty members, equipment, and supplies such as texts, drugs, training aids, surgical supplies, and the like. There have been two major upheavals in the medical education in Korea. During the Japanese regime in Korea most of the important faculty posts were filled by Japanese and few Koreans were given the opportunity to become qualified for medical teaching. For example, when Seoul National University (then known as Keijo Imperial University) was under Japanese control there were 200 members on the faculty of the medical school but not a single professorship was offered to a Korean.[6] With the sudden withdrawal of Japanese in 1945, the shortage of qualified doctors to serve on the medical school faculties was great. However, prominent Korean physicians took over and all the medical schools were functioning with active support from Allied Military Government by the time the second blow fell in June 1950.

The Republic of Korea was just starting to meet the educational needs of its people, newly introduced to independence and democracy, when the communist invasion of June 1950 wrought physical and economic destruction and caused disorganization to the political and social life of the people. More than one third of the total school buildings in South Korea were completely destroyed and another 15 percent were so badly damaged that the buildings were unsatisfactory for educational use. About 27 percent of all public and school libraries and 81 percent of all school equipment and instructional materials, including textbooks, reference materials, desks, blackboards, scientific equipment, and teaching aids were completely destroyed.[7] While these figures represent the loss and damage to the educational physical plant as a whole, the medical schools are included in them. The rapidity with which the war closed the medical schools is shown in table 1.[8]

TABLE 1

School	Date of suspended operation
Seoul National Medical College	28 June 1950
Severance Union Medical College	28 June 1950
Kwangju Medical College	10 July 1950
Taegu Medical College	20 July 1950

Medical Colleges Damaged and/or Destroyed

The physical plants of Severance Union Medical College and the Kwangju Medical College were subsequently badly damaged by the war and the plants of Seoul National University and the Taegu Medical College were partly destroyed. The disposition of the physical plants during the first two years of the Korean conflict are shown as follows:

1. The Seoul National University moved its staff and faculty to Pusan with the movement of the government and a considerable portion of the refugee population at the time of the retrogression into the Pusan perimeter in the fall of 1950. The main buildings of the school in Seoul were occupied by the Headquarters of Fifth Air Force and the hospital was taken over by a ROK Army Hospital. The University resumed partial operations in December 1950 in temporary quarters in Pusan.

2. Severance Union Medical College was badly damaged (it is located across the street from the Seoul Railway Station) but some of the buildings, or portions of them, were still used

as housing for refugees and for limited relief medical care. When the college resumed limited teaching operations in December 1950, it was in a greatly reduced physical plant and under extremely crude and limited conditions.

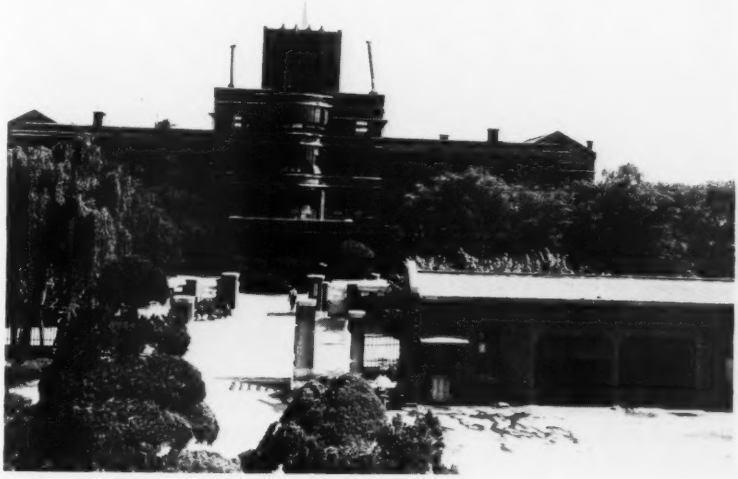


Figure 1. Front view of the main building, Taegu Medical College, Taegu, Korea.

3. Kwangju Medical College suspended all teaching in July 1950 and continued with a small patient load in the hospital's intact buildings, or portions of them, after the North Koreans were driven back north in the fall of 1950. The medical college resumed operations with a very limited enrollment and staff in the same buildings in December 1950.

4. Taegu Medical College was founded with a teaching hospital of 17 departments.[4] It grew and expanded into new buildings (figs. 1 and 2) in September 1932. In August 1945, Dr. P. K. Koh, the first Korean dean, reorganized the college with an all-Korean faculty and students. In July 1950 the college was forced to cease operations; its buildings were occupied by U. N. military forces and later by the headquarters of Korean Military Advisory Group (KMAG) while the teaching hospital was occupied by the 1st ROK Army Hospital unit. More than 80 percent of the faculty and 85 percent of the student body were drafted into the ROK Army. In December 1950 the Ministry of Education and Defense ordered the college to reopen on the maximum basis possible. Accordingly, teaching was resumed by 17 faculty members with

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30 students. Classes were held in the homes of the faculty members. Practically no textbooks, equipment, or supplies were available.

Figure 2. Front view of the teaching hospital, Taegu Medical College, Taegu, Korea.

In March 1951, through the assistance of United Nations Civil Assistance Command, Korea (UNCACK), several quonset huts and a small stock of textbooks and medical supplies were given to the college. One year later two buildings of the teaching hospital were released to the college by the 1st ROK Army Hospital unit. This permitted the teaching hospital and the basic science departments to resume operations on a limited scale.

For the fall term beginning on 14 October 1952, the college obtained possession of a few temporary frame buildings several blocks distant from the teaching hospital. This annex, consisting of three bare, unheated, poorly lighted, uncomfortable, crudely equipped classrooms (fig. 3) and a small administrative office, served the first, second, and third year classes.

The fourth year students' classes were conducted in a small portion of the teaching hospital.

A brief tabulation of the enrollment and other statistics on Taegu Medical College are shown in table 2.[4]

Since its existence the Taegu Medical College has graduated a total of 1,035 students, including Japanese, Korean, and Chinese.

Figure 3. A class of second year students in the annex of the Taegu Medical College, November 1952. Note crude furniture, empty light socket, and worn blackboard.

Physicians, Medical Training, and Supplies Needed

In the fall of 1952 the college began receiving monthly shipments of medical supplies from the Civil Relief in Korea (CRIK) for use in the teaching hospital, and the physical plant facilities were augmented by a gift of 40 beds and a shipment of blankets from UNCACK.

In 1952 Taegu Medical College became affiliated with the Kyong Puk University in Taegu, of which Dr. P. K. Koh had become president and his duties as Dean of the Medical College were assumed by Dr. Chong-Ho Pae.

The efforts of the medical colleges in Korea to operate, even in a reduced condition under monumental handicaps and shortages of adequate and proper equipment and supplies, were very commendable and revealed a spirit in the Korean medical profession that deserved the support and encouragement of everyone.

As fighting progressed and more ROKA divisions were activated and required medical officers and nurses, the drain (by draft) on the civilian practitioners became heavier. While private practitioners were being drafted from civilian life the health of the civilian populace became endangered. This was particularly

TABLE 2

Year	Total enrollment	Total No. of graduates annually	Size of faculty (Korean)	Number of female students	Number of female graduates	Number adjunct U. N. faculty
1945	330	20	58			
1946	164	21	72	4		
1947	194	32	78	11		
1948	216	53	75	17		
1949	224	72	86	17	4	
1950	50	19	17	11	8	
1951	104	17	17	6	1	
1952	131	36	19	5	2	22
1953	202	30	28	7		41
1954	270*	18*		8*	1*	
1955	364*	44*		11*	1*	

*Anticipated.

true in the large cities where thousands of refugees were assembled. All of these factors forced the issue that the graduates of medical schools were badly needed and medical education in Korea had to be rejuvenated on a large and efficient basis.

The need was apparent to many persons but it became a particular interest of Major General William E. Shambora, the Chief Surgeon of the Far East Command, who, in turn, communicated his enthusiasm for the project to Brigadier General Louis Holmes Ginn, Surgeon of the Eighth Army and Colonel Byron L. Steger, Surgeon of the Korean Communications Zone. The FECOM Chief Surgeon expressed his interest in several concrete ways. First, he pointed out the desirability of U. N. medical officers and other allied scientists actually participating in the teaching of the medical schools on a part-time basis. This was a very desirable project because heretofore Koreans had learned primarily German and Japanese medicine and had never been exposed to American medical practice and teaching. From observation of the excellent results achieved in Korea by American medicine and, with their natural eagerness to learn, the Korean medical faculties and students readily accepted the suggestion of instruction from U. N. teachers. Second, the FECOM Chief Surgeon and others sent urgent appeals to various agencies in the United States requesting that teaching aids of all kinds be sent to Korea for the use of medical students. Textbooks and journals were promptly sent by many generous agencies and individuals and the material began to flow into Korea in the fall of 1952 (fig. 4).

U. N. Officers Participate in Teaching Programs

In the meantime, U. N. medical officers and allied scientists in Korea, stimulated by the interest of the surgeons of the major commands, in October 1952 began actively participating in the teaching programs at three medical schools. The staff of Severance Union Medical College in Seoul was supplemented by officers from the Eighth Army, primarily from the Office of the Surgeon. Assistance to Seoul National University Medical College and Ewha Women's Medical College, both located in Pusan in temporary quarters, was given by an adjunct faculty drawn largely from the officers serving in the Korean Base Section headquarters and the 21st Station Hospital in Pusan. The faculty of Taegu Medical College was augmented by medical service officers serving in the Taegu area in the medical sections of Hq. KComZ, Hq. Fifth Air Force (Rear), the 25th Station Hospital, and the Provincial Team of UNCACK and one officer from the Office of the Surgeon of KBS. The Surgeon, KComZ, served as adjunct Dean of the College and organized the U. N. Staff.

Figure 4. One of the first shipments of books received by Taegu Medical College from donors in the United States.

An illustration of the type of instruction offered by the adjunct faculties of these colleges is given by the schedule of the Taegu Medical College from 14 October 1952 through 24 March 1953 in table 3.

Because the Korean faculty varied from college to college, the adjunct military faculties were called on to teach different courses at the various colleges (tables 4 and 5).

The Korean scholastic year is organized differently from that in the United States. The school day is divided into four teaching periods of 90 minutes each (last year, 105 minutes) as follows: first period, 0830 hours to 1000 hours; second period, 1010 hours to 1140 hours; third period, 1300 hours to 1430 hours; fourth period, 1440 hours to 1610 hours. The first semester was programed on the following schedule: 13 April 1953, classes begin; 15 to 20 June 1953, examinations; 18 July to 1 September 1953, summer vacation; 21 to 26 September 1953, final examinations. The second semester will begin on or about 15 October 1953 and will end on or about 15 March 1954.

The various medical disciplines were organized under volunteer medical or allied science personnel of the U. N. Armed Forces

who were designated monitors of their respective disciplines. The general headings presented in Taegu Medical College were as follows: general and orthopedic surgery; obstetrics and gynecology; urology; eye, ear, nose and throat; endocrinology; medicine; pediatrics; allergy; dermatology; bacteriology; public health; physiology; pharmacology; gross anatomy; and biochemistry.

TABLE 3. *Type of instruction offered by Taegu Medical College*

Subject	No. of 105-minute periods
Second year class	
Parasitology	20
Public health	22
Bacteriology	22
Antibiotics and bacteriostatic agents	7
Dermatology	5
Radiology	6
Third year class	
Pediatrics	22
Orthopedic surgery	18
Fourth year class	
Internal medicine	20
Genitourinary surgery	18

Problems, a Challenge to Instructors

From the very beginning, participation in regular teaching in Korean medical schools was a rich experience for the U. N. adjunct faculties. The many problems which continually arose presented a real challenge to the instructors. Some of these problems were minor and easily solved; others were never satisfactorily solved during the first term.

First, none of the classrooms were heated and this was a new experience to the faculty but not to the students. The students came to class warmly dressed and only on the coldest days did they show evidence of discomfort or inconvenience in taking notes or sitting still for long periods of instruction. The instructors soon learned to come to class warmly dressed.

In addition to lack of heat, the classrooms were poorly lighted (electricity was a scarce and unreliable commodity in Korea) and the furniture and fixtures were crude and uncomfortable. In most cases the students sat on benches in pairs at crude desks and the instructor used a worn wooden blackboard temporarily mounted on a makeshift easel (fig. 3).

TABLE 4. *Seoul National University Medical School in Pusan*

Subject	Number of periods
First year class	
Physiology	2
Second year class	
Hematology	3
Third year class	
Public health	11
Anesthesiology, chest surgery	3
Fourth year class	
Anesthesiology, chest surgery	3
Orthopedic and brain surgery	11
Public health	11
Diseases of the genitourinary system	5
Obstetrical anesthesia	2
Cardiology, psychosomatic medicine, rheumatic fever, neurosis, psychoneurosis, aviation medicine	11

Language proved to be less of a handicap than anticipated. Korean students are taught English in the lower grades and acquire a fair reading knowledge of it as children. They read English with far less difficulty than they either hear or speak it. In addition to English learned in school, many of them had opportunities to learn English by associating in some capacity with American missionaries, the occupation troops, Allied Military Government, or KMAG during the years 1945-1949 and after the outbreak of the war in June 1950. A certain few students in every class spoke excellent English and could easily interpret for the others who may have had only a reading knowledge of the language and were slow at it. The U. N. instructors soon learned that if they spoke very slowly and continued to speak slowly (without speeding up) most of the students would grasp the material with minimum difficulty. Frequent pauses in the instruction gave students with excellent perception a chance to translate the instructor's remarks into Korean for the benefit of the others. The reverse process was also employed. At first the Korean students were reluctant to ask questions. Whether this was due to their natural timidity or to their uneasiness about expressing themselves in English was unknown. Because of this, the scheme of having the student interpreters in the class collect the questions from all the students and present them to the instructor was evolved. This system worked with great success.

TABLE 5. *Ewha Women's Medical School, Pusan*

Subject	Number of periods
First year class (12 students)	
Biochemistry, physiology	11
Fourth year class (13 students)	
Endocrinology, cardiology, metabolic diseases	11
General and orthopedic surgery	11
Public health	11
Eye, ear, nose and throat	11
Hematology, pathology	11
Obstetrics	5

U. N. instructors also learned quickly that it was necessary for them to enunciate distinctly and to scrupulously avoid slang or expressions which were often unfamiliar to the Koreans. They also learned that, because of the necessity for speaking slowly, the instruction proceeded at a slower pace than they had been accustomed to in their own medical schools. It was not possible to cover nearly as much material per hour but it was decided that it was better to cover less material and insure that the students actually absorbed what was offered.

It became clear very early that Korean students were unaccustomed to facetiousness and wit from their instructors. Education, particularly medical, is serious business in Korea and students usually make tremendous sacrifices to attend school. Thus, any time devoted to levity is not appreciated and attempts at jokes or wit generally fall flat with the students. However, by the time the school year ended in March 1953, most of the students were beginning to adapt themselves to Americans-at-ease methods.

The lack of textbooks was a serious handicap to instruction. This was partially solved in several ways:

1. A few texts began to arrive and could be cited as references from time to time. However, with the number of students who had to use one book in the library, this was not too workable.

2. Some of the instructors wrote out their lectures verbatim and had them reproduced by mimeograph or ditto process. These were handed to the students a few days prior to presentation which gave them an opportunity to study them. For obvious reasons this was not satisfactory although it did give the students the semblance of a textbook in the course. It was very poor pedagogy

to read a lecture to the students and furthermore tended to leave the impression that the time of both the students and the instructor was being wasted in the process. In addition, it took a vast amount of time to prepare lectures in this fashion and soon became a strain on Army reproduction facilities and typists.

3. At the beginning of the new school year on 13 April 1953, this subject was discussed at a conference with the Dean of the Taegu Medical College. Out of this discussion came a new policy which seemed to work admirably. The plan was for each instructor to prepare a rather detailed outline of the material he proposed to discuss in any given period of instruction, including sketches, diagrams, and references to the texts and journals which had by that time been received by the school library. These outlines are then reproduced by the college through a Korean mimeographing process and distributed to the students a few days prior to the date of the delivery of the lecture. These outlines are reproduced in English handwritten script with unusual and technical words in Korean characters in parentheses and with interline spaces adequate for students to fill in any notes they desire to add from the instructor's remarks on the date of presentation.

In presenting the subject the instructor carefully followed the outline making explanatory remarks and supplementing it with material not covered in the outline. In doing this, it was found that students absorb more of the material if words which are more or less unfamiliar to the students are written on the blackboard. Another little trick in this connection was for the instructor to pause frequently when he came to a word (he soon learns to sense the words) that was new to the students, to write it on the blackboard, and ask those with dictionaries to look up the word in their English-Japanese or English-Korean dictionaries, to read its counterpart in Japanese (which they all understand), and to explain its meaning (in Japanese or Korean) to the others.

The lack of training aids, such as models, charts, graphs, slides, microscopes, and many others, proved to be a tremendous handicap to optimum presentation of material. Most of these were left to the ingenuity and improvisation of the instructors. Certain Army training films, particularly the professional medical films, were used because the Korean students can follow them very well and they are delighted with this type of instruction. In addition, the use of a balopticon obtained from Army sources permitted the projection of illustrations and text material from textbooks and journals on a screen for all students to read and absorb.

Field Trips and Ward Rounds New

Two American teaching technics, almost totally unfamiliar to Korean students, but thoroughly pleasing to them, were field trips to hospitals, water supply installations, garbage dumps, insect and rodent-control activities and ward rounds for teaching purposes. These methods have been received by the Korean students with a great deal of enthusiasm which has been gratifying to their U. N. instructors.

Rehabilitation Plans

With the advent of the new and current school year on 13 April 1953, extensive plans were made to augment the Korean faculty of Taegu Medical College with more adjunct professors from U. N. sources than had participated in the previous semester. This was necessary due to the additional demand and drain on the Korean faculty members by the Korean Armed Forces, the galloping inflation which forced many older faculty members more and more into private practice to make a satisfactory income, and the enlarged enrollment of students.

Another major boost to the Taegu Medical College was provided by a three-way shift of military activities in the Taegu area. First, the 25th Station Hospital moved in December 1952 to new buildings that had been specially built for it. This released the buildings and grounds of its former site for occupation by KMAG Headquarters and the 1st ROKA Hospital. When Hq. of KMAG vacated the main classroom and administration building of the Medical College (fig. 1) in January 1953, the college prepared to give up its temporary annex and other makeshift housing and reoccupy its main building at the beginning of the new term on 13 April 1953. In March 1953, the 1st ROKA Hospital vacated the major portion of the teaching hospital (fig. 2) which it had occupied for two years and work was started on rehabilitating it for its original purpose.

Perhaps the largest and most important development to date in the rehabilitation of medical education in Korea was the decision by the United Nations Korean Reconstruction Agency (UNKRA), which had been created by the United Nations to take over all functions of relief and rehabilitation of the nation, to allot a large sum of money from its FY 1953 budget to begin the reconstruction and re-equipment of the college into a modern, well-equipped, medical center.

Accordingly a draft project was prepared as a joint UNKRA/UNCACK project for the rehabilitation of the physical and technical facilities of the Taegu Medical College.[2] The decision to do this was predicated on the self-evident fact that the socio-

economic development of Korea is closely related to improved standards of medical education and public health. The selection of Taegu Medical College for this project arose from the facts that it was the one major college currently occupying its own buildings, it was clearly out of the present or potential war zone, prewar it was the fourth largest city in Korea, and it offered the best traditional site for a major institution such as planned because Taegu has for centuries been regarded as the cultural center of Korea.

The original budgetary estimate of $500,000 for the project was made without expert detailed surveys of the buildings and the hospital because they were occupied by the military.[9] Later studies and surveys of a preliminary planning nature indicated that full rehabilitation of the buildings, including such basic functions as lighting, heating, glazing, et cetera, would cost about $800,000, and a reduced project for minimal restoration of facilities was estimated at $525,000.[10] Additional funds would be required for the technical re-equipment and medical supplies, equipment, and staff. Reconstruction which would provide luxury facilities was not contemplated but the minimum essentials for good standard medical education—by Korean standards and not American or Western in general—would be provided.

In addition to actual reconstruction and refurnishing the college, it was contemplated that funds would be provided for an expert Western staff to work with Korean counterparts; accommodation for such foreign staff; supplementation to the salaries of a selected Korean staff in the medical college and hospital so they could afford to devote their full working time to the institution; and funds whereby an adequate number of nonpaying indigent patients could be cared for in the hospital for teaching and research purposes.

Construction contracts have already been let for part of this project and work is proceeding on the renovation of the teaching hospital and some minor buildings.

Graduate Professional Training Program

Another very promising new development in Korean medical education is the graduate professional training program. The Surgeons of the major commands in the Far East noticed the almost total lack of a graduate professional training program for physicians in Korea. As a consequence they are going to other countries for study at the rate of 130 or more per year. Because the economy in other countries is so much better than in Korea, only 30 to 35 physicians have been returning per year. This results in a net loss to the nation of about 100 physicians per year. Because Korean medical schools graduate no more than 150 new doctors each year, this is a serious problem.

During the visit of the Rusk Mission of the American Korean Foundation to Korea, Major General William E. Shambora, Chief Surgeon, AFFE, Dr. Howard Rusk, and Colonel Byron L. Steger, the Surgeon, KComZ, discussed the question of graduate professional training, and all were agreed that a residency training program should be established in the U. S. military hospitals in Korea. The 171st Station Hospital was considered to be the most suitable hospital in which to begin the program, because the patients are Korean civilian employees of the Armed Forces and there is a large patient load with a wealth of clinical material for observation and treatment. Later, perhaps, the program could be extended to other U. S. Army hospitals in Korea and, if all semifixed hospitals were included, from 40 to 60 physicians could be trained.

Implementation of the graduate professional training plans for Korean physicians is now underway. The first 10 residents have been selected from the ROK Army and assigned to the 171st Station Hospital for training, which began on 1 June 1953. Those selected are graduates from medical college with at least one year of internship and all speak English. The tentative plan is to include these specialties: internal medicine, general surgery, urology, anesthesiology, ophthalmology, orthopedic surgery, and radiology. To begin with, the plan calls for six months of training in a specialty and will consist of understudying a recognized specialist, first as an observer and later as an assistant. There will also be ward rounds, grand rounds, case work-ups, clinical conferences, clinical pathologic conferences, and some didactic instruction. Emphasis will be placed on preceptor-type training on the job with as few formal classes as possible.

Summary

Organized education was one of the first casualties of the Korean conflict. Before that South Korea had an excellent school system with six recognized medical schools. All of these were closed, their buildings were destroyed or occupied by the military. They operated for two years under very crude makeshift conditions. In the fall of 1952, several things happened that gave encouragement to these schools: (1) participation in actual teaching by volunteer U. N. doctors and allied scientists on a part-time basis; (2) donations of many medical books and journals were received from donors in the United States; (3) Taegu Medical College regained the occupancy of all its buildings; (4) UNKRA budgeted approximately $825,000 for the reconstruction, refurnishing, re-equipping and restaffing of the Taegu Medical College with the objective of making it the outstanding medical center in Korea and professionally comparable to institutions of like kind everywhere.

In April 1953, the concept of a graduate professional training program was planned through encouragement of the Rusk Mission to Korea to train ROK doctors in U. S. hospitals. This began on 1 June 1953.

All of this is very encouraging and brightens the future outlook for medical care and public health in Korea where the disruption of the civilian population and shortage of physicians has created enormous needs for such medical guidance. Koreans are a brave, resourceful people and it is gratifying to observe the tremendous efforts they have made in restoring the essential services in their land. With people making such efforts to help themselves, particularly in re-establishing their medical schools in the face of frustrating shortages of equipment, supplies, and staff, it is a matter of real satisfaction to help them.

All of these projects and improvements that have been made and are planned for medical education in Korea are very gratifying to those who have participated in them. As these and other projects develop to fruition, the people of all the United Nations can feel proud of their efforts to assist a grateful nation to rehabilitate itself.

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Hippocrates would have been puzzled at the amounts of patent and prescribed medicine consumed by the public today. He would be amused to observe that self-medication seems to increase in proportion to newspaper, periodical, and radio concentration on bodily ills, as in the United States, and that prescribed medicine disproportionately increases with economic accessibility of physicians and druggists, as witnessed in England in recent years.

—HERBERT RATNER, M. D.
in *GP*

DUODENAL ULCER IN MILITARY PERSONNEL

A Social Service Study of 40 Cases

ANNE A. BARRETT, *A. B., M. S. W.*

IT has been well documented that duodenal ulcer is an important cause of manpower loss for the Army. During World War II most soldiers who had a diagnosed duodenal ulcer were separated from the service. Some medical officers believe that all soldiers who have duodenal ulcer are unfit for further military service while other medical officers believe that almost all of them can be returned to duty, because ulcer symptoms can be controlled either medically or surgically. Between these two opposite opinions is the belief of many medical officers that motivation for military duty is the major criterion to be used in the disposition of the soldier with duodenal ulcer.[1] These various opinions are based on the different convictions of medical officers concerning the military effectiveness of a person once he has developed an ulcer. This problem has been discussed in previous articles and statistical evidence has been adduced to prove that many soldiers with recurrent duodenal ulcer have completed long and useful military careers.[2,3] Other observers[4,5] stated that volunteer or career soldiers may do well despite the presence of recurrent attacks of ulcer, but that nonvolunteers will repeatedly attend sick call until released from the service.

Psychosomatic factors play an important role in ulcer recurrence. This study attempts to evaluate the soldier's personality as reflected by his social adjustment, civilian and military, prior to the development of objective evidence of a duodenal ulcer. A search was made for situational and emotional stresses which may have served to activate the ulcer.

Forty consecutive soldier patients who had roentgenologic evidence of an active duodenal ulcer on the gastroenterology section of this hospital were studied. Following initial evaluation by the ward physician while laboratory studies were in progress, interviews by the social worker were begun and continued until

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the required assessment could be made. Where practical, assistance was given the patient in making adjustment to the problems discovered.

SOCIAL ADJUSTMENT

The first factor considered was his social adjustment prior to illness. Five areas of adjustment were considered and were rated as either satisfactory or unsatisfactory. The patient's social adjustment was rated as satisfactory unless disturbances were present in three or more of the following areas.

Family. Deprivation of parental care at an early age; extreme poverty; presence of strong negative attitudes toward home, parents or parent substitutes, and siblings.

School. Inability to finish high school, unless due to financial or family pressures; many failures in school; difficulties in getting along with teachers or schoolmates; expressed negative attitude toward school.

Occupation. Inability to select an occupation in keeping with his capacities; failure to retain jobs; frequent job changes without realistic reasons; reliance on unemployment compensation; inability to get along with superiors.

Social. Inability to get along with people; unstable marriage marked by conflict, separation, or divorce; inability to accept family responsibility or parenthood.

Military. Inability to get along with superiors; failure to achieve and hold grade; two or more courts-martial.

STRESS

A second factor considered was the presence of stress situations at the time of onset of symptoms leading to his hospitalization. An effort was made to distinguish between stresses peculiar to personal life and those due to military life. Personal life stresses included such problems as illness or death in the family, increased family responsibility, intense marital conflict, financial responsibilities exceeding income. Military stresses included new experiences which the patient was unable to handle because of personality characteristics. For example, increased grade and responsibilities in a patient who was a predominantly passive individual and became disturbed in positions of authority and responsibility. Combat duty and repeated overseas assignments were also included as stress factors.

MOTIVATION

A third factor taken into consideration was past and current motivation for military service as indicated by the patient's

attitudes. Motivation was rated as unsatisfactory if the patient was markedly dissatisfied with his current duty assignment, or if he had strongly opposed coming into the service and had attempted to avoid induction, or if he was experiencing intense feelings of frustration or discrimination.

PERSONALITY

A limited attempt was made to evaluate the patient's personality characteristics. Predominant and easily recognized traits were noted and were used mainly for an additional evaluation of the adjustment and stress factors. These traits were: impulsiveness, fear of responsibility, feelings of discrimination, passivity, dependency, tendency to withdraw under stress, conflict with authority, goal-directed drive, marked striving for success, perfectionism, ability to assume responsibility, and fear of failure.

The chi square (x^2) of Edwards[6] was employed in the analysis of the data collected. The correction factor suggested by Edwards has been applied in most of the x^2 tests which contain a cell entry of less than five.

DATA COLLECTED

The 40 patients who met the criteria outlined earlier were 36 white and four Negro enlisted men. Their ages varied from 20 to 54 years, the median being 26. Length of service prior to first hospitalization ranged from one day to 22 years. The median length of service prior to first hospitalization was two years. Twenty-five patients were regular army, 13 were draftees, one was a reservist recalled to active duty, and one was a National Guardsman whose unit was activated. Twenty-one patients were in the grade of corporal or below and 19 were above, 16 of whom had served more than two years.

Seven patients had ulcer symptoms before entering the service, but only three of these believed that military duty aggravated their symptoms. Twenty-six of the patients were returned to duty after medical treatment, and six of seven returned to duty after an operation. One patient was given a disability discharge, partially because of an anxiety state; two were separated from the service for the convenience of the government; and five who had previously failed to make a satisfactory adjustment were transferred to the neuropsychiatric service for disposition.

The total adjustment was satisfactory in 22 and unsatisfactory in 18 patients. Figure 1 gives a comparison of the number of patients having previously satisfactory adjustments with those having previously unsatisfactory adjustments, according to length of service. The selection of the four groups was arrived at by arranging the length of service prior to first hospitalization in con-

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secutive order and dividing by four. The divisions did not include any overlapping periods. The same four groups are used throughout the study in groupings according to length of service.

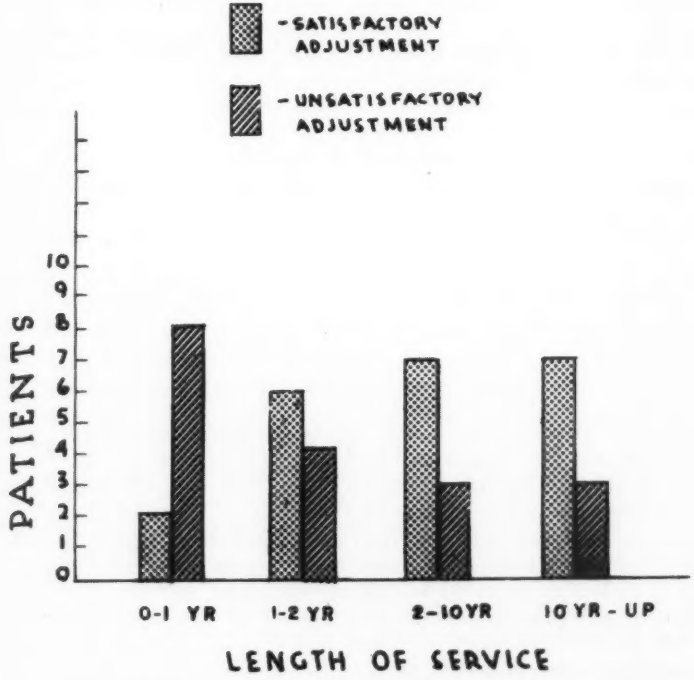

Figure 1. Social adjustment prior to service of patients with a duodenal ulcer according to length of service prior to first hospitalization.

Figure 1 shows that the group of patients hospitalized within the first year of service contains the largest number who had previously unsatisfactory adjustments. Only two of the group had previously satisfactory adjustments. Although each group contains only ten patients, there is a tendency for the number of satisfactory adjustments to increase with the length of service, but this trend only approaches statistical significance.

Figure 2 is the same as figure 1 except that the occurrence of identifiable stress factors (military or personal or both) has been added. Recognizable stress factors are found much more frequently in patients with previously satisfactory adjustments than in those with previously unsatisfactory adjustments, in whom the role of such stress factors is much less apparent. When all pa-

tients are considered, there is a strong trend for the number of stresses to increase with length of service (significant at the .10 level of confidence). Of the 22 patients with previously satis-

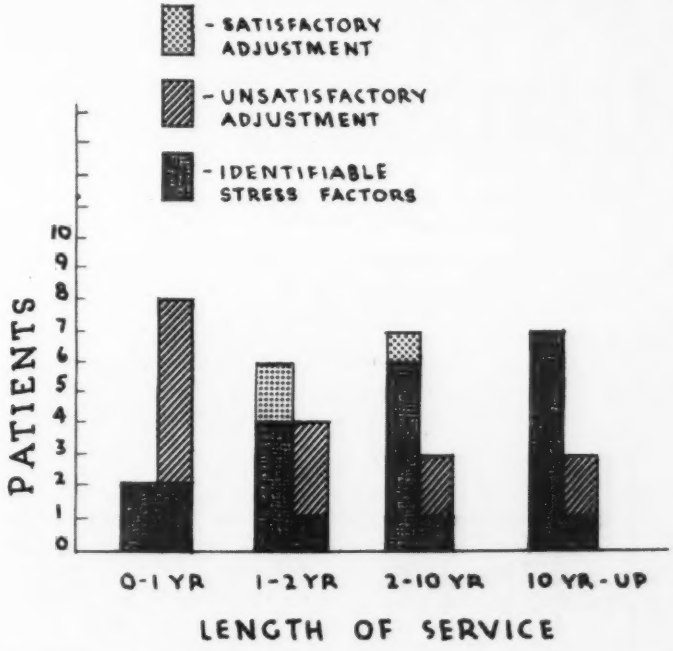

Figure 2. Relation of identifiable stress factors to previous social adjustment and length of service prior to first hospitalization.

factory adjustments, 19 (86 percent) had identifiable precipitating stress and only five (26 percent) of the 18 patients with previously unsatisfactory adjustments had such identifiable stress. The comparison of the presence of stress factors in the two groups reaches statistical significance at the .01 level of confidence.

Table 1 gives a further breakdown of stress factors according to length of service, prior adjustment, and kinds of stress. Of the 19 patients who had previously satisfactory adjustments and identifiable stress factors, five had only military stress factors, nine had nonmilitary stress factors alone, and five had a combination of both. The number of nonmilitary stresses, either alone or combined, as opposed to the number of military stresses for all patients is statistically significant at the .05 level of confidence.

TABLE 1. *The relationship between previous adjustment, length of service and stress factors*

Length of service	Prior adjustment	Number of patients	Stress factors				
			Stress present	Nonmilitary	Military	Both	No stress
0-1	S*	2	2	1	1	0	0
	U**	8	2	1	1	0	6
1-2	S	6	4	1	2	1	2
	U	4	1	0	0	1	3
2-10	S	7	6	2	1	3	1
	U	3	1	0	0	1	2
10-up	S	7	7	5	1	1	0
	U	3	1	0	1	0	2
Total	S	22	19	9	5	5	3
	U	18	5	1	2	2	13

* S = Satisfactory.
** U = Unsatisfactory.

The most striking trend is that motivation deteriorated in the patients who had more than two years of service (see table 2). Motivation was almost consistently poor and unchanged in patients with less than two years of service. The difference between the two groups is statistically significant at the .01 level of confidence. In the group with less than two years of service, only four were volunteer soldiers.

Table 3 shows the presence of stress factors in those patients whose motivation deteriorated according to previous adjustment. The presence of stress factors concomitant with deterioration of motivation was significantly higher in those patients with previous satisfactory adjustments than in those with previous unsatisfactory adjustments (.05 level of confidence).

Personality characteristics of marked striving for success, fear of failure, and assumption of responsibility were used as identifying features of the typical "ulcer personality." Only ten of the sample population, all with previous satisfactory adjustment, displayed such characteristics. Thus, significantly less than half of the patients studied conform to the classical ulcer pattern (significant at the .01 level of confidence).

DISCUSSION

One of the most conspicuous results of this study was the failure to detect the so-called "typical ulcer personality" in 75 percent of the patients. This was especially striking in those patients rated as having unsatisfactory adjustments prior to service. Not one of the 18 patients rated in this manner had personality characteristics usually ascribed to the typical ulcer patient. Less than half of those having satisfactory adjustments fitted the pattern. It is extremely improbable that such a proportion of ulcer cases studied would purely by chance so consistently fail to conform to the popular conception of "ulcer personality."

Patients with a history of poor social adjustment were predominantly nonvolunteer soldiers and had very little service. Military or personal life stresses were not an obvious factor in the activation of a duodenal ulcer in these patients, or if so, these factors were not readily apparent. In contrast, those soldiers with satisfactory social adjustment were predominantly volunteers, and activation of the ulcer followed a rather obvious emotional or situational stress. Previous studies have indicated that the career soldier may perform well despite the presence of a recurrent duodenal ulcer but that the nonvolunteer will not respond well to medical management and will continue to complain until released from the military service.[4,5] Our two groups of patients appear to correspond with those of Berk and Flood.

TABLE 2. *Comparison of current and past motivation according to length of service and previous adjustment*

Length of service	Prior adjustment	Number of patients	Motivation			
			Past		Current	
			S	U	S	U
0-1	S*	2	0	2	0	2
	U**	8	1	7***	1	7***
1-2	S	6	1	5	1	5
	U	4	1	3	0	4
Total less than 2 yrs.		20	3	17	2	18
2-10	S	7	7	0	2	5
	U	3	3	0	1	2
10-up	S	7	7	0	5	2
	U	3	2	1	0	3
Total more than 2 yrs.		20	19	1	8	12

*S = Satisfactory. **U = Unsatisfactory.

***Although numerically identical the two comparisons do not represent an absence of change in motivation. One patient who previously had satisfactory motivation deteriorated in this respect while another patient who previously had unsatisfactory motivation improved, leaving the numerical values unchanged. Thus these figures do not reveal the presence of one patient included in table 3 whose motivation did deteriorate. The statistical significance between the two groups mentioned in the discussion of table 2 is not affected by the apparent discrepancy.

TABLE 3. *Comparison of the presence or absence of identifiable stress factors in patients whose motivation deteriorated according to previous adjustment*

Kind of adjustment	Number of patients	Presence of stress	Absence of stress
Satisfactory	7	6	1
Unsatisfactory	6	2	4

Stress factors of a nonmilitary nature, or of a combined military and nonmilitary nature, appear significantly more frequently in the patients studied than do stress factors of a purely military nature. The preponderance of nonmilitary or combined stress factors is also significant when well-adjusted patients are considered as a separate group. Thus the diagnosis of an ulcer seems related more frequently to stress arising in the personal life of the patient than to that arising in the military service.

In soldiers with ulcers, deteriorating motivation for military duty is seen significantly more often among those with two or more years of service prior to their first hospitalization than among those with less than two years of service. This latter group displays an unchangingly poor motivation for military duty. The consistently poor motivation could be expected in a largely nonvolunteer group. No significant difference in motivation for military service was noted between satisfactorily and unsatisfactorily adjusted patients. Among patients with deteriorating motivation for military service, stress factors appear significantly more often in the background of well-adjusted patients than in the background of poorly adjusted patients. Thus change in motivation is more likely to be secondary to stress in well-adjusted patients than in poorly adjusted patients.

It seems likely that the soldier whose previous adjustment was poor and who becomes ill under ordinary stress, or whose motivation deteriorates without external influence, will be ineffective in the Army regardless of whether he has a recurrence of his ulcer or not. On the other hand, the person who was well adjusted and was an efficient soldier until a major stress occurred is likely to continue to behave in the same pattern of efficiency as before, once he has recovered. If the stress is recurrent, the ulcer is likely to recur.

Adjustment, stress, and motivation are all significant factors in the activation of a duodenal ulcer. Social evaluation furnishes valuable information concerning the individual patient and will be of material aid in his proper disposition. It would seem wise

when personality factors and faulty social adjustment indicate that the patient with a duodenal ulcer will be an ineffective soldier to separate him from the service through psychiatric channels; the easy way out, *i. e.*, separation of the emotionally unfit under the excuse that he has had a duodenal ulcer, should be avoided. The social case worker can help many of these patients solve the problems underlying their illness and may help reduce the recurrence of ulcer symptoms by helping the patient make a more satisfactory social adjustment.

SUMMARY

A social-service study was made of 40 military patients having roentgenologic evidence of duodenal ulcer. The patients were evaluated as to their social adjustment, their personality characteristics, the presence of stress situations which could have activated the ulcer, and their motivation for military duty. Patients with less than two years of service at the time of their first hospitalization more often had made poorer social adjustment to civilian and military life than those patients with longer service. Identifiable emotional or situational stress seldom preceded activation of the ulcer in patients with an unsatisfactory social adjustment but was usually apparent in those whose social adjustment had been satisfactory. Stresses in the personal life of patients were significantly more common than stress of a military nature. Deteriorating motivation occurred more frequently in career soldiers and was secondary to stress more often in patients with previous satisfactory adjustments.

Adjustment, stress, and motivation are all significant factors to be considered in the evaluation of ulcer patients and in determining their proper disposition. Separation from the military service for a duodenal ulcer through medical service channels should be for medical reasons only; separation through psychiatric channels would seem the proper course when personality factors and faulty social adjustment make it likely that the patient will be an ineffective soldier.

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MEDICINE, WARFARE, AND HISTORY

JOHN F. FULTON, *M. D.*

IT is not commonly realized that many of the most significant advances in medical science have been made by medical officers in the armed services or by civilian physicians working under the stimulus of wartime exigency. Whereas the ultimate compensations of war to any society are usually few and seldom recognized, in the field of medicine, over the years, they have been numerous and many of them highly important. A number of examples may be cited from the historical record.

In his illuminating series of notes on the history of military medicine, the late Colonel Fielding H. Garrison[1] made the observation that, while there were military surgeons in ancient times who occupied positions of responsibility and respect in the armies of Greece and Rome, it was the Swiss Confederation, in the fourteenth century, that antedated all other nations of modern Europe in state care of the wounded. Municipal ordinances were issued notifying the individual soldier that his government was behind him and would look after his welfare on the field of battle. The eminent historian Conrad Brunner[2] pointed out further that, from the time of the battle of Laupen in 1339, the Swiss archives are replete with records of monies distributed for the care of the wounded and their dependents. Brunner also discovered that barber-surgeons were engaged by individual Cantons to attend the wounded after battle. The Swiss thus set an example to all of the other warring countries of western Europe.

In France in the 1470's we find that Charles the Bold, Duke of Burgundy, had placed a surgeon in each company of 100 lancers, that is, one surgeon to 800 men. It is also recorded that the lancers received £ 12 monthly from the Duke's coffers while his surgeon-physicians received only £ 5. When Edward IV of England joined Charles the Bold in the campaign against Louis XI, he brought with him a chief physician, two "body physicians," a surgeon, and 13 assistant barber-surgeons. These men, who

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attended the sick and wounded, gained valuable experience for dealing with civilian problems, injury, and disease when the wars had ended.

A century later we find Andreas Vesalius, founder of modern anatomy, serving as a military surgeon in the armies of Charles V. His contemporary, Ambroise Paré, who lived through the reigns of seven French monarchs and served four of them, not only introduced the ligature for arresting hemorrhage resulting from injury or amputation but also used antiseptic salves for dressing wounds. A man of high character, Paré spoke with authority and did more to place surgery on a modern basis, as Vesalius had anatomy, than any other person until the time of Joseph Lister. Paré was also a pioneer in advancing the art of rehabilitation of the injured. He devised many forms of prosthesis, including wooden arms, legs, mechanical fingers, false noses, and ears—advances that again were adopted by civilian surgeons.

During the seventeenth and first half of the eighteenth centuries, advancement of military medicine proceeded slowly, and there was no one comparable to Paré until the last half of the eighteenth century, when James Lind, the great British naval surgeon, appeared on the scene. There was, however, one notable figure in the seventeenth century, Richard Wiseman, who served the royalist armies in England throughout the civil war and after the Restoration and who was responsible for many improvements in surgical technic, including the art of amputation, especially in the case of gunshot wounds affecting the joints. His book, "Severall Chirurgicall Treatises,"[3] published in 1676, is one of the important landmarks in the history of surgery, both military and civilian.

To James Lind, M. D. (1716-1794) (to be distinguished from James Lind, M. D.[1736-1812], also a Scotsman) of Edinburgh, a surgeon long in the service of the Royal Navy, we owe the first clear-cut proof that scurvy can be prevented by the use of citrus fruits among sailors on long ocean voyages. His "Treatise on the Scurvy,"[4] published in 1753, is a classic, and as a result of it a dread disease, common not only among seamen but in civilian populations where citrus fruits are not readily available, has been virtually eradicated. Fully conscious of the importance of his discovery, Lind wrote in the preface to the first edition: "The subject of the following sheets is of great importance to this nation; the most powerful in her fleets, and the most flourishing in her commerce, of any in the world. Armies have been supposed to lose more of their men by sickness, than by the sword. But this observation has been much more verified in our fleets and squadrons; where the scurvy alone, during the last war [ending in 1748], proved a more destructive enemy, and cut

off more valuable lives, than the united efforts of the French and Spanish arms."

WILLIAM BEAUMONT AND SILAS WEIR MITCHELL

In 1853 the American medical profession mourned the death of William Beaumont, U. S. Army surgeon, who, in addition to advancing the art of surgery in our armed forces, made a brilliant study of the processes involved in human digestion. When Beaumont was stationed at an isolated army barracks in northern Michigan, a French-Canadian courier, Alexis St. Martin, was accidentally shot through the stomach. Beaumont attended his wound with infinite care. When it healed it left a fistula that Beaumont looked on not as a mere wound but as a unique opportunity to inspect his patient's stomach mucosa by direct vision and to study the rate of digestion of individual foodstuffs through action of the gastric juices. He was also able to remove these digestive secretions and to study their action on food outside the body, a study that resulted in his celebrated monograph, "Experiments and Observations on the Gastric Juice, and the Physiology of Digestion,"[5] which so well exemplified Pasteur's famous dictum, "In the field of observation, chance favours only the mind which is prepared."

The United States armed services have had many other illustrious medical officers who have done original work through opportunity to study wounded men, ours as well as those of the enemy. Many names come to mind, such as that of John Shaw Billings; but no one during the Civil War occupies the position of Silas Weir Mitchell, a physiologist by training and a neurologist through special interest. Mitchell, with W. W. Keen (who ultimately became a celebrated Philadelphia surgeon) and G. R. Morehouse, early in the Civil War (1861) had occasion to study peripheral nerve injuries and the sensory and motor disturbances that result therefrom. Perusal of the protocols of their preliminary Circular Letter issued through the Office of the Surgeon General on March 10, 1864,[6] and of the monograph that they published later in the same year,[7,8] makes it clear that Mitchell was the dynamic force behind the study. His analysis of the problem illustrates his powers of observation and his genius for making sound physiologic deductions. Among other things, Mitchell and his colleagues discovered that in certain cases following severance of an important nerve, especially when the nerve's disruption was associated with infection, there were abnormal sensory manifestations, *i. e.*, hyperesthesia in the extremity affected, a syndrome that Mitchell named causalgia. The problem of causalgia has been studied for nearly a hundred years in both civilian and wartime cases of nerve injury, and it came to be most actively studied during World War II, when its incidence was frequent.

In retrospect, an even more important contribution of Mitchell and his collaborators lies in the clear-cut description of "primary" and "secondary" shock. Thus, in discussing the various types of shock, one reads in the circular on reflex paralysis:[6] "The majority of physicians will no doubt be disposed to attribute the chief share in the phenomena of shock * * * to the indirect influence exerted upon and through the heart. There are, however, certain facts, which duly considered, will, we think, lead us to suppose that in many cases the phenomena in question may be due to a temporary paralysis of the whole range of nerve centres, and that among these phenomena the cardiac feebleness may play a large part, and be itself induced by the state of the regulating nerve centres of the great circulatory organs. * * * But there do exist certain cases, more rare it is true, in which singular affections of the nerve centres, other than those of the heart, occur as a consequence of wounds."

WORLD WAR I

During World War I there were many medical advances stimulated by the war itself, particularly in the sphere of prevention of infectious disease. It is said that when the Austrians attempted to invade the Balkans the front was held not by guns but by the louse and the devastating epidemics of typhus caused by the jumping creatures. It is estimated that nearly a million Austrian soldiers poised on the Balkan border perished from epidemic typhus. The Russian armies had much the same difficulty and so did those of other countries of western Europe. Our soldiers were similarly troubled in the trenches on the western front, but through use of hygienic methods there was far less devastation.

On the basis of the experience of World War I, every effort was made in World War II to protect our troops from typhus, especially in the Mediterranean theater. Meanwhile, DDT, the most effective insecticide then known, had been introduced and was used by the Eighth Army under the direction of General Fox and General Hume to delouse the population of Naples and other points of southern Italy. This practically abolished the typhus hazard among our occupation forces and the Italian civilians.

It would be difficult to enumerate all the special branches of medicine that have benefited by war research, but there is nothing so striking as the protection afforded our troops by mass inoculation, particularly against tetanus. To quote Brigadier General Elliott C. Cutler,[7] chief consultant in surgery of the European theater of operations in World War II: "I would like to speak of the miracle which has occurred in eliminating tetanus from military surgery. Let me recall some figures for you. In our Civil War, the mortality rate was from 89 to 95 percent. Shortly before World War I, under the benefit of antitoxin which was

discovered and elaborated upon by the use of animals, the mortality rate had dropped to between 40 and 80 percent. During World War I, large statistical evidence showed a mortality rate of 20 to 58 percent; but, in this second World War, there were only 11 cases known to have occurred amongst 10,700,000 men. Of these 11 cases, 5 had been given toxoid and 6 had not. Moreover, in these 11 cases, there are records of only four deaths, two of which occurred in individuals who had received the basic series of toxoid but no booster dose, and two in individuals who had not received even the basic series. This is, in my mind, one of the great miracles of modern medicine. The basis of the establishment of a proper toxoid rests squarely upon animal investigation, and no greater debt could be acknowledged to our friends in the animal kingdom than this advance for the good of humanity."

In World War I many other lessons were learned, particularly the importance of moving casualties rapidly from the front lines before infection had set in. The mortality incidence from battle casualties was far less than in the Civil War or the Spanish-American War, but it was still high as compared with the mortality rate from casualties in World War II.

Harvey Cushing took the lead in dealing with head wounds, and, while he worked slowly, much to the consternation of other Allied surgeons, he took the rugged view that one wound well handled served a better purpose than a dozen hastily repaired wounds, since in nearly all the latter cases the patients would die anyway. His paper[10] published in the *British Journal of Surgery* in 1918 is still a classic of wartime cranial surgery and has been widely quoted by Hugh Cairns, Eldridge Campbell, and others who dealt with battle casualties in World War II.

WORLD WAR II

Introduction of antibiotics. Between World War I and World War II there were many important contributions useful not only in time of war but for medical and civilian defense. Undoubtedly the most important were the developments in the field of the antibiotics. Much research had been done on them before 1939, but their introduction as therapeutic agents was greatly expedited by World War II. Sir Howard Florey and his resourceful team at Oxford were responsible for establishing the therapeutic potentialities of penicillin. They were the first to isolate it in pure form; they were also responsible for determining its effective dosage and for securing its large-scale commercial production. Several years ago when someone referred to penicillin as an outcome of wartime research Sir Howard protested, and his objections were well taken, for he had begun to work on the antibiotics in the early thirties; but it would have been many years

before penicillin could have been made available in large quantities had it not been for the stimulus of war. The story of penicillin has been frequently told and need not be repeated here, particularly since Sir Howard and Lady Florey have recently published detailed monographs[11,12] in which the meaningful story of the antibiotics has been traced in detail.

Surgery has probably been more benefited by wartime research than any other branch of medicine. In World War I no surgeon would have dreamed of closing an infected wound, or even one that was potentially infected, without leaving a drain. Now, thanks to the use of chemotherapeutic agents such as the sulfonamides and penicillin, it is possible to close wounds of almost every description, even those of the abdomen, without drainage and without fear of subsequent complication from infection, provided all dead tissue has been carefully removed prior to the closure. So great at one time did confidence become in the effectiveness of the new chemotherapeutic agents that some of the younger surgeons grew careless and began closing badly contused wounds without "débridement," *i. e.*, without careful removal of seriously damaged tissue. Such injured areas may be without circulation, and they therefore become the foci of serious infection, since the bloodstream is unable to carry antibacterial agents into such regions. Penicillin thus cannot be regarded as a substitute for good surgery but merely a highly important adjunct. These newer principles of traumatic surgery, as worked out in the war theaters, have had immediate application in all forms of civilian traumatic surgery, and they are rapidly being adopted in our surgical clinics, largely through the influence of the younger medical officers returning from active service.

A second important result of the use of penicillin and the sulfonamides has been the avoidance of unnecessary amputations and unnecessary removal of potentially viable tissue. With the greater confidence that these drugs are bringing to the surgeon he is able to operate much less radically. Formerly it was taught that all contused tissue should be removed from an injured area, but a contused muscle may still have an active circulation and therefore be capable of regaining its normal function. When the thigh muscle or the calf has been injured by a high-velocity missile, the muscle is generally contused over a large area and a surgeon of the old school would in most such instances amputate rather than risk secondary infection. During the last two years of World War II and during the Korean campaign countless extremities injured in this manner have been saved by combining penicillin therapy with conservative surgery. One of the burning arguments, however, that one still encounters in surgical amphitheaters turns on the criterion of tissue viability: how can a surgeon be certain that a contused muscle will recover its func-

tion? The old adage ran, "When in doubt, remove it"; a newer epigram might be, "If it bleeds, it can recover," and "When in doubt, leave it."

BLOOD FRACTIONATION

Surgery has also been influenced by wartime studies on human blood and the blood plasma fractions that have become available in pure form, again as a direct result of wartime medical research. At the beginning of the war, much effort was devoted to the preparation of blood fractions suitable for transfusion. Blood plasma (whole blood minus the red blood cells) was made available, but since many untoward reactions occurred from the transfusion of incompatible plasmas, and since under war conditions blood typing was often difficult or impossible, the plasma proteins were fractionated and the globulin fraction that carries the allergic potentialities of the blood was eliminated, leaving the albumins and fibrinogen. Albumin was then prepared in pure form and was thus made available for immediate transfusion without fear of complications.

It soon became obvious, and this should have been clear from our experience in World War I, that when men have sustained severe hemorrhage whole blood is needed for transfusion, not merely plasma or albumin, since many weeks are required for the body to regenerate its red blood cells. The British had attempted to collect and store whole blood in 1939, but their efforts were largely unsuccessful because of difficulties in preservation. In 1943 an effective preservative was developed by the U. S. National Research Council, and within a few months whole blood was being flown in enormous quantities to Europe as well as to all the outposts of our Pacific theater, as it is now being flown to Korea. So effective is this service that blood drawn on the west coast was delivered in refrigerated containers less than 48 hours later at points such as Leyte, and at the end of the war it was quickly reaching Seoul and other points in the Korean theater.

As a result of these investigations on blood and its fractions, the civilian surgeon has an imposing array of blood substitutes ready for his use at any time, and he is able to count on a supply of stored whole blood rather than having to find a blood donor at the scene of an accident or at some outpost of civilization. He has also come to depend on two other significant blood fractions, namely, fibrin and thrombin, which, thanks to the work of Edwin Cohn, Franc Ingraham, and others, are available in pure form and in combination can be used to stop the most stubborn hemorrhage, *e. g.* , bleeding from the brain substance or the liver, which is notoriously difficult to arrest. A more homely use of the fibrin-thrombin combination is for stopping a nosebleed or the hemorrhage that so often follows tooth extraction.

Important new branches of medicine, important to the armed services and to civilians alike, have been created by wartime necessity. Although no word has yet been coined to cover the great new area of chemical applications in disease control, *i. e.*, insect repellents, insecticides, and antimalarials, which are now numerous because of our attempts to make military operations possible in tropical regions, this special field presents itself as a new and discrete branch of medicine and should be so recognized. Just as Major Walter Reed and General William C. Gorgas made possible the building of the Panama Canal through control of yellow fever, so the repellents (against insect and shark) and the new insecticides made possible operations in the South Pacific in World War II that otherwise would have been too costly to contemplate. Other new and significant branches that have developed are aviation and submarine medicine.

AVIATION MEDICINE

Oxygen administration. Progress in aviation, stimulated by developments in military aircraft, has led to many advances of outstanding value both for medical defense and for civilian aviation.[13-15] One of these is oxygen administration. During the First World War, few fighter planes could achieve altitudes greater than 18,000 ft., and the use of oxygen, except in unusual instances, was not deemed a prime military necessity; hence, such oxygen masks as there were were crude in design and wasteful from the point of view of oxygen supply. The need for oxygen masks was well known, however, from early balloon ascent, and particularly from the tragic Tissandier disaster, which occurred on 15 April 1875. Three men had ascended in a balloon to an altitude of 28,000 ft., and all three were overcome by altitude sickness before they could breathe the oxygen that they had on board. As a result, two of the balloonists, Crocé-Spinelli and Sivel, succumbed, and Tissandier alone of the three survived. The intrepid French experimenter, Paul Bert, established the fact in a homemade pressure chamber that it was not low pressure as such that had caused the death of the two balloonists but rather the low pressure of oxygen at 28,000 ft. Paul Bert exposed himself, along with a bird and a rat, to a pressure of 430 mm. Hg. The bird vomited and appeared quite sick, and at a slightly higher altitude the bird was close to death and the rat uneasy. At that point, Professor Bert became dizzy and his pulse had increased from 60 to 86. He then began to breathe oxygen, his dizziness disappeared, and his pulse within two minutes had dropped to 64, but it was still impossible for him to whistle. He continued his ascent to an altitude equivalent of 29,000 ft. (428 mm. Hg), at which time the bird was prostrate and a burning candle had turned very blue, with its flame almost extinguished.

This celebrated experiment made it quite clear that oxygen must be available if planes without pressure cabins were to ascend to altitudes above 18,000 ft. Further study carried out during World War II made it clear that vision, mental alertness, and the capacity to fly a plane with safety began to diminish at altitudes as low as 5,000 ft., this being particularly true of night vision. Hence, when military aircraft began to ascend to altitudes of 25,000 and 30,000 ft. and later to 40,000 and 50,000 ft.* the problem of oxygen supply became acute and all the problems worked out for military aircraft were immediately applicable to commercial planes carrying civilians. It has been said that the Battle of Britain was won with a few oxygen masks. In a literal sense this is perhaps true, because Hitler's military pilots, both fighters and bombers, began in the summer of 1940 to come in at altitude ceilings well above the tolerance of an ordinary flier and they had developed systems of oxygen supply that for a brief time were superior to those of British fighters. Thanks to the efforts of the Flying Personnel Research Committee and particularly to one of its members, Sir Brian Matthews, the British developed a successful oxygen mask and a system of supply that made it possible for British fighters to meet German raiders at their own altitude, and through this circumstance the Battle of Britain was won, virtually in a single day, 15 September 1940, when 186 German planes were shot down. The *Luftwaffe* quickly decided it could no longer stand this rate of attrition. The British were tireless in their efforts to improve their oxygen masks and modes of supply, and our own air forces profited immeasurably by British experience, which was made freely available to the U. S. Army and Navy Air Forces.

Pressure cabin aircraft. * * It early became obvious to some investigators, including Paul Bert, that, if the gondola of a high-altitude balloon were artificially pressurized, a balloon might ascend higher into the atmosphere without endangering life. But years passed, and it was not until 1933 that the National Geographic–U. S. Army stratosphere flight was able to make an ascent in a pressurized gondola with adequate pressure control. In this memorable ascent, Stevens and Anderson of the U. S. Army Air Corps achieved an altitude of 72,395 feet.

The experience encouraged the U. S. Army Air Corps to think of pressurized combat aircraft, and to Harry G. Armstrong, now Surgeon General of the U. S. Air Force, must be given credit for having, through a historic Air Corps technical report, outlined

*In the *Illustrated London News* for 16 May 1953, it is reported that on 4 May a new English turbo-jet bomber (Canberra type) reached an authenticated altitude of 63,668 ft., which stands as the altitude record for heavier-than-air machines under human control.

**The material in this and the following section is based on references 16 and 17.

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the physiological requirements of sealed high-altitude aircraft compartments. This was a starting point for developments of pressurized planes in this country, the first of which (the XC-35) was flown in April 1937. In this development the United States was ahead of both Britain and Germany, and thanks to the enterprise of the Lockheed Aircraft Corporation finally succeeded in making their stratoliners (B-307) and Constellations effectively pressurized. After 1946 Constellations began to make regular transatlantic flights at altitudes ranging from 18,000 to 24,000 ft., while the pressure in the cabins was maintained at an average corresponding to 8,000 ft.

Technical difficulties in pressure cabin aircraft prove numerous, and for the most part they stem from man's physiological requirements, *i. e.*, maintaining cabin pressure, and, of almost equal importance, adequate ventilation. The average air passenger, without lung or heart disease and under the age of 70, is quite comfortable at an altitude of 8,000 ft., even though at that height his night vision may be somewhat impaired. But ventilation of the fuselage presents a very real problem because of the accumulation of water vapor and carbon dioxide; also in hot weather body odors and fumes from aircraft instruments and engines demand rapid change of air at appropriate pressure. In a completely sealed cabin a change of air of 2 to 3 cubic feet per minute per person will keep the humidity and the carbon dioxide at a tolerable level, provided there are no exhaust fumes.[18] Leaks in the pressure cabin equipment are inevitable, however, and with further experience it became evident that a change of at least 12 cubic feet per minute per person would be essential for comfortable air travel. This involved installation of larger turbo-pressurizers and air coolers to make the pressurized air tolerable from a thermal standpoint. Through experience gained during World War II these difficulties have now been largely overcome, and essential equipment has now been installed in all long-range, high-flying, pressurized passenger aircraft.

Explosive decompression. An ever-present hazard in pressurized aircraft, both military and commercial, is that of sudden or explosive decompression. Pressurized aircraft, such as the Constellation, is stressed to withstand a pressure differential of 6.5 lb. per square inch. This would permit flight at 30,000 ft. with an internal pressure equivalent of 8,000 ft. If a large military aircraft, flying at 30,000 ft., were suddenly depressurized by enemy action, the pilot, if he had oxygen available, could carry on, but other crew and passengers without oxygen would retain useful consciousness for about two minutes. If no oxygen were available, crew and passengers would become unconscious within a matter of minutes and death might ensue within a period of 8 to 10 minutes. Hence, commercial planes, in which explosive de-

compression might occur as a result of the breaking of a window, failure of turbos, or explosion of an observation dome, are not permitted to fly above 22,000 to 24,000 ft., since a large plane cannot descend rapidly enough to insure consciousness of the occupants, especially of the crew.

With military planes, which ascend to much greater altitudes, the situation is even more critical. For example, if pressurized military aircraft were flying at 52,000 ft. and were suddenly decompressed, the pilot would have only 15 to 20 seconds to get himself out of the plane, and, if he did not descend within three three to five minutes through free fall to 20,000 ft., his heart would have stopped. A direct pressure dive might enable the pilot to achieve 15,000-20,000 ft., but he would be unconscious when he reached that level. In view of this circumstance it has been deemed safer to bail out for a free fall with a parachute that will automatically open at 10,000 to 12,000 ft. With rockets and the much-talked-of space ship, which will fly through ether in which there is no pressure and no oxygen, the paramount importance of maintaining adequate pressure levels is obvious, and the energy required to maintain pressure, let alone jet propulsion, is so great that even the most optimistic are loath to predict that the problem of fuel supply could be solved, despite all the resources of human ingenuity, within the life span of this generation. Perhaps one might reach the moon, but how would energy be secured to insure return? More difficult conundrums have been solved in the past, but, although I happen to be an optimist with faith in the resourcefulness of some future generation, I believe that the only possible solution lies in atomic energy with all its weighty paraphernalia. "And so it turns out that in man's quest for mastery of the air a great step forward has been taken in the successful development of pressurized cabins. These developments, however, are in their early infancy from the engineering standpoint, and their use in larger transport planes, in rockets and jet-propelled craft, will succeed only if the limitations of the human frame, both in its structure and in its functions, are kept constantly in mind. And let us not forget that it was a flight surgeon and not an engineer who wrote the specifications for the first pressurized plane."[16]

Acceleration in high-speed aircraft. The successful use of oxygen presupposes a steady blood circulation without undue gravitational pressure on the heart; however, it became obvious to the French flight surgeons in 1918 that rapid turns and dive pull-outs tended to diminish the flow of blood to the brain. In the Snyder Trophy Races in 1929, confusion and dimming of vision were encountered when the pilots were rounding the pylon; and in 1932 a man of great insight, Heinrich von Diringshofen of the German Air Ministry Research Laboratories at Tempelhof in

Berlin, constructed a human centrifuge to simulate problems of acceleration in flight. Before this, however, two equally thoughtful Dutch investigators, Jongbloed and Nooyons of Utrecht, had studied the effects of acceleration on the level of the systolic blood pressure in animals. As a plane's speed is augmented or diminished, the pilot is pushed backward or forward in his seat by a force directly proportional to the rate of acceleration or deceleration. If the increase of speed occurs at 32.2 ft. per second, the pilot would be pushed against the back of his seat by a force equal to that of gravity, but, when pilots pull out of dive bomb maneuvers, the direction of the acceleration is from head to foot, and, as far as the circulation is concerned, there is a tendency to pull blood from the head.

Need for protection from high acceleration in aircraft has become even more acute in the last few years owing to the development of the fast-flying jet plane and the possibility of using rockets for human transportation. Even when planes were unable to fly at rates of more than 200 to 300 miles per hour, acceleration had become a vital problem, especially in dive bombers, and in fighter aircraft that were able to make fast turns. Now that jets are achieving speeds of 500 to 700 miles per hour, the need for protection from acceleration is vastly increased. The pneumatic pressure suit developed by Captain John Poppen, MC, USN, Prof. F. A. S. Cotton in Australia, and Dr. Harold Lamport in New Haven, Conn., and many others, has served to give measurable and strategically significant protection for military pilots. Such suits have proved of inestimable value, especially during the D-Day operations, and more recently for our fighter pilots in Korea.

Design for safety. During the war there were many instances in which a fast-flying bombing plane crashed into a mountain side and everyone on the plane, except for the tail gunner, was instantly killed. Accidents such as this have stirred inquiry into the reasons for these apparently miraculous survivals. They lie in the fact that the rear gunner's head and the rest of his body were supported by solid structure at the time of the impact and in the fact that he was riding backward. Those situated in a more forward position in a crashing airplane are thrown from their seats because of insufficient strength of seat belts and seat moorings, and according to the wartime report of Whittingham, director general of medical services of the R. A. F. (and now of B. O. A. C.), 95 percent of the deaths in air crashes result from head injury, *i. e.*, the head of the passenger is thrown violently against solid structure.

It became obvious, in view of episodes such as these, that rear-facing, heavily moored seats would confer a degree of pas-

senger safety at least 10 times as great as that which could be achieved with forward-facing seats with fragile seat belts to hold the passenger in place in the event of accident. The British public and airplane manufacturers have already seen the virtue of rear-facing seats, and many of their new passenger planes are so equipped. In the United States the resistance on the part of both the flying public, and more particularly the aircraft designers, has been so great that to date only Northwest Airlines have seen fit to install rear-facing seats in commercial craft.

The principles involved in the greater safety from rear-facing seats are simple. If one falls to the ground and strikes one's head on soft earth, the head is decelerated in a matter of a few tenths to one half a second; the blow being thus softened, the accident victim may not suffer concussion or unconsciousness. When, however, a person knocked off a bicycle strikes his head on solid cement that does not yield, he may suffer fracture of the skull, concussion, hemorrhage, and possibly even death. In these circumstances the head is decelerated in a matter of a hundredth of a second or less, depending on whether the falling person has on his head a soft felt hat or a football helmet. Crash helmets to minimize sudden deceleration of the head are now in use in almost every military aircraft, since pilots, unfortunately, are unable to occupy rear-facing seats with present flight equipment.

Mr. Hugh De Haven, director of crash injury research at Cornell University Medical College in New York, is, among others, responsible for stressing these considerations. In this connection, one of his most impressive studies has been the analysis of nonfatal suicide leaps in the city of New York. Persons have survived virtually uninjured after leaps from the tenth and even the seventeenth floor of New York buildings, and, when the circumstances are analyzed in any given case, it turns out that the intended suicide victim has usually landed flat on his back in a soft garden plot or on a ventilating screen, or his fall may have been broken by awnings or an automobile top. This again indicates the importance of gradual rather than abrupt deceleration. These principles have proved to be immediately applicable not only in aircraft design but also in the automotive industry. A summary of these considerations had been given in Hugh De Haven's "Development of Crash-Survival Design in Personal, Executive and Agricultural Aircraft."[19]

The literature of aviation medicine, the great part of which has come from military installations, affords many other examples of material that is immediately applicable to commercial aircraft and to the automotive industry. It stresses the importance of having men of vision, imagination, determination, and sound training in the medical departments of all our military services, for the con-

tributions they make are likely to be of importance not only to military operations but to society in the broadest sense.

SUBMARINE MEDICINE

Submarine medicine offers many examples of scientific disclosures with general application, but they are of less immediate significance to the civilian public at the present time, since it is not much given to traveling in submersibles, except for a few hardy souls such as William Beebe, who study marine life at great depths in the sea, and the "frogmen," who do mysterious things at depths of 100 or more feet in the interests of national defense. Of course, the diver and the caisson worker can always learn much from submarine experience, especially about protection from caisson disease and diver's "bends." There is no journal of submarine medicine, but the physiologic problems encountered by submarine personnel are numerous and the literature pertaining thereto has been analyzed, summarized, and systematically arranged in a remarkable bibliography by Commander Ebbe C. Hoff, MC, USNR,[20] entitled "A Bibliographical Sourcebook of Compressed Air, Diving and Submarine Medicine," published by the Navy Department through the Government Printing Office in February, 1948. The bibliography contains nearly 3,000 entries, each of which is summarized and reviewed in subject groups. It does not fall within the scope of this paper to discuss the technical phases of submarine medicine, but attention should be directed to K. E. Schaefer's comprehensive monograph (826 pages) on German submarine medicine.[21] Dr. Schaefer, chief of the Submarine Physiological Laboratory at Heidelberg during the war, is now continuing his important studies in the physiology branch of the U. S. Naval Medical Research Laboratories at New London, Conn. His recent reports from the submarine base should also be consulted.

In closing this historical survey on the importance of military medicine to national and civilian defense I can do no better than to quote the words of Captain J. S. Taylor, MC, USN,[22] written after World War I: "The world was far from even apprehending what it has yet to learn thoroughly, that in the field the distribution of medical supplies, prompt evacuation, skillful first aid, shelter, food, and restoratives available early for every fallen combatant are of infinitely more importance than highly technical relief to difficult cases. More critical still are the problems relating to later demobilization, to hospitalization and rehabilitation of war victims, and the faithful but well-ordered and economical relief of the wreckage of war. Millions will be spent and more millions wasted until the time comes when it is a recognized part of the program of national defense to organize methods of post bellum relief at the same time that activities are initiated for the prosecution of hostilities. We have progressed from the day of medical attendance for leaders to medical attend-

ance for all combatants, and leaders are increasingly alive to the immediate necessary needs of their forces; but we have not yet attained to a comprehensive grasp of the requirements or possibilities of military medicine."

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ARMY, NAVY, AND AIR FORCE MEDICAL OFFICERS GIVEN AWARDS AT MILITARY SURGEONS MEETING

Major Wallis L. Craddock, MC, USAR, Fort Douglas, Utah, was awarded the Sir Henry Wellcome Prize and Medal for 1953 on 11 November during the sixtieth annual meeting of the Association of Military Surgeons in Washington, D. C., for his essay on "An Evaluation of the Pulmonary Features of Systemic Fungus Disease." An Army and an Air Force officer received honorable mention for their paper on "The Inguinal Hernia Problem Viewed From the Standpoint of Recurrent Cases." The authors were Colonel Warner F. Bowers, MC, USA, and Major Evan W. Schear, USAF (MC), both of Brooke Army Hospital, Tex.

The Founders Medal of the Association, first authorized in 1941 on the occasion of the fiftieth anniversary meeting, was presented to Rear Admiral Bertram Groesbeck, Jr., MC, USN (ret.), Indianapolis, Ind., and to Rear Admiral Winfred P. Dana, MC, USN, and Commander Frank B. Voris, MC, USN, of Washington, D. C.

The Gorgas Award for 1953 was given jointly to Colonel Douglas B. Kendrick, MC, USA, United States Military Academy, and Captain Lloyd R. Newhouser, MC, USN, Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C., for their achievements in collaborating on the development of blood substitutes for field use prior to and during World War II.

The Seaman Award for the most notable contribution published in the *Military Surgeon* during the year was given Colonel Norman T. Elton, MC, USA, Edgewood Arsenal, Md.

Dr. Robert Abbe (1851-1928) is the father of radiotherapy in the United States. He brought the first radium to this country in 1903 and used it in the treatment of patients with carcinoma.

AN ANALYSIS OF HOSPITAL RECORDS OF PATIENTS DISCHARGED FROM A LARGE TUBERCULOSIS SERVICE

Use of Punch Cards in Evaluating Data From 1,423 Cases

CARL W. TEMPEL, *Colonel, MC, USA*
FORREST W. PITTS, *Captain, MC, USA*
ROBERT L. MAYOCK, *Captain, MC, USA*
WILLIAM W. STEAD, *Captain, MC, USA*
JOHN B. PLUM, *Lieutenant Colonel, MC, USA*
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FRANCISCO T. ROQUE, *Major, MC, USA*

MORE advances have been made in the treatment of tuberculosis during the past decade than were accomplished during the previous half century. Measurement of success and failure during this interval therefore assumes unusual importance. It is only by careful evaluation of each patient that the extent of progress can be accurately assessed. Furthermore, this is the first step in the accumulation of clinical data on large numbers of patients to be used for retrospective studies. Follow-up studies of patients with tuberculosis to evaluate treatment cannot be made unless certain basic facts are available. Such information must include the type, extent, and duration of disease as well as sufficient detail on the nature and results of therapy employed to evaluate its precise role.

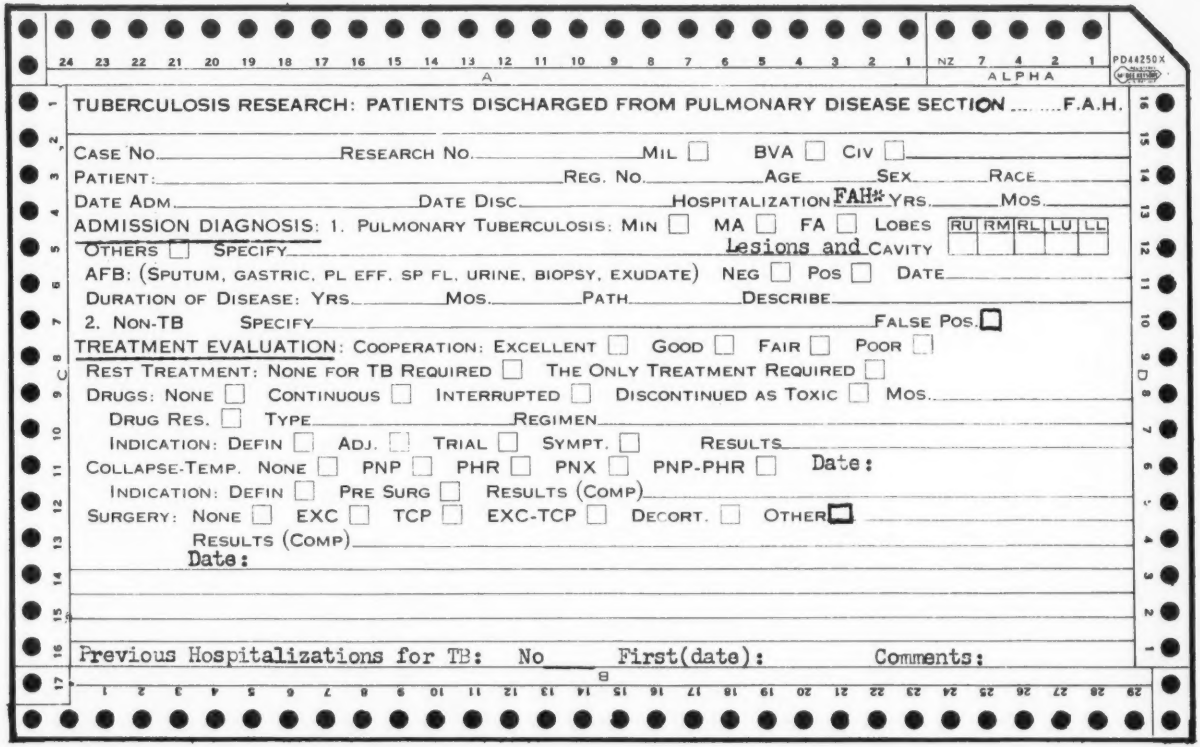
CARD FOR EVALUATING THE TREATMENT

A punch card* was designed to record diagnostic, therapeutic, and administrative data (figs. 1A and 1B). This information was furnished by the ward physicians from the 1,200-bed tuberculosis service. The cards, as well as representative roentgenograms,

From Fitzsimons Army Hospital, Denver, Colo.

Hyman Spector Memorial Lecture, St. Louis University, 20 April 1953.

*Keysort card manufactured by McBee Co. was used in this study.


TUBERCULOSIS RESEARCH: PATIENTS DISCHARGED FROM PULMONARY DISEASE SECTION ..... F.A.H.

CASE NO. RESEARCH NO. MIL ☐ BVA ☐ CIV ☐

PATIENT: REG. NO. AGE SEX RACE

DATE ADM. DATE DISC HOSPITALIZATION FAH* YRS. MOS.

ADMISSION DIAGNOSIS: 1. PULMONARY TUBERCULOSIS: MIN ☐ MA ☐ FA ☐ LOBES RU RM RL LU LL

OTHERS ☐ SPECIFY Lesions and CAVITY

AFB: (SPUTUM, GASTRIC, PL EFF, SP FL, URINE, BIOPSY, EXUDATE) NEG ☐ POS ☐ DATE

DURATION OF DISEASE: YRS. MOS. PATH. DESCRIBE

2. NON-TB SPECIFY FALSE POS. ☐

TREATMENT EVALUATION: COOPERATION: EXCELLENT ☐ GOOD ☐ FAIR ☐ POOR ☐

REST TREATMENT: NONE FOR TB REQUIRED ☐ THE ONLY TREATMENT REQUIRED ☐

DRUGS: NONE ☐ CONTINUOUS ☐ INTERRUPTED ☐ DISCONTINUED AS TOXIC ☐ MOS.

DRUG RES. ☐ TYPE REGIMEN

INDICATION: DEFIN ☐ ADJ. ☐ TRIAL ☐ SYMPT. ☐ RESULTS

COLLAPSE-TEMP. NONE ☐ PNP ☐ PHR ☐ PNX ☐ PNP-PHR ☐ Date:

INDICATION: DEFIN ☐ PRE SURG ☐ RESULTS (COMP)

SURGERY: NONE ☐ EXC ☐ TCP ☐ EXC-TCP ☐ DECORT. ☐ OTHER ☐

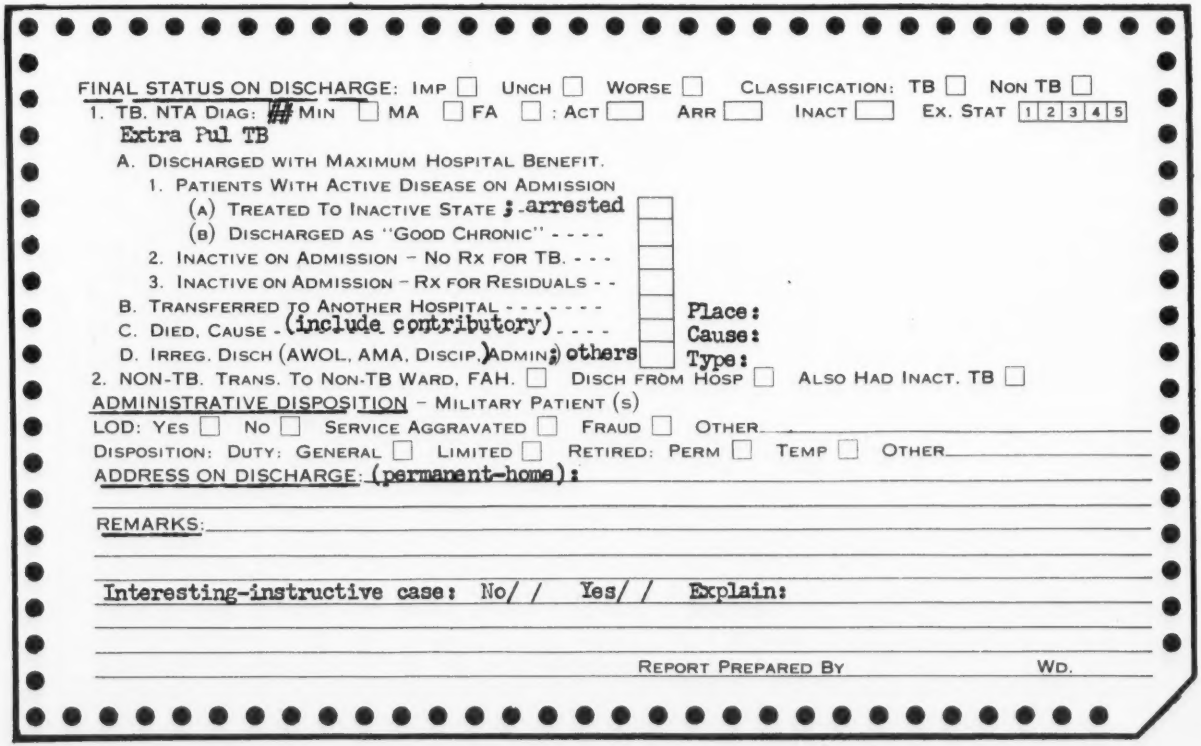
RESULTS (COMP)

Date:

Previous Hospitalizations for TB: No ____ First(date): Comments:

Figure 1A. Front of card used to record diagnostic, therapeutic, and administrative data on every patient discharged or transferred from the tuberculosis section.

Figure 1A. Front of card used to record diagnostic, therapeutic, and administrative data on every patient discharged or transferred from the tuberculosis section.



FINAL STATUS ON DISCHARGE: IMP ☐ UNCH ☐ WORSE ☐ CLASSIFICATION: TB ☐ NON TB ☐

1. TB. NTA DIAG: ## MIN ☐ MA ☐ FA ☐ : ACT ☐ ARR ☐ INACT ☐ EX. STAT 1 2 3 4 5

Extra Pul TB

A. DISCHARGED WITH MAXIMUM HOSPITAL BENEFIT.

1. PATIENTS WITH ACTIVE DISEASE ON ADMISSION

(A) TREATED TO INACTIVE STATE; arrested ☐

(B) DISCHARGED AS "GOOD CHRONIC" - - - - ☐

2. INACTIVE ON ADMISSION – NO RX FOR TB. - - - ☐

3. INACTIVE ON ADMISSION – RX FOR RESIDUALS - - ☐

B. TRANSFERRED TO ANOTHER HOSPITAL - - - - - - - ☐ Place:

C. DIED, CAUSE - (include contributory) - - - - ☐ Cause:

D. IRREG. DISCH (AWOL, AMA, DISCIP.)ADMIN; others ☐ Type:

2. NON-TB. TRANS. TO NON-TB WARD, FAH. ☐ DISCH FROM HOSP ☐ ALSO HAD INACT. TB ☐

ADMINISTRATIVE DISPOSITION – MILITARY PATIENT (S)

LOD: YES ☐ NO ☐ SERVICE AGGRAVATED ☐ FRAUD ☐ OTHER

DISPOSITION: DUTY: GENERAL ☐ LIMITED ☐ RETIRED: PERM ☐ TEMP ☐ OTHER

ADDRESS ON DISCHARGE: (permanent-home):

REMARKS:

Interesting-instructive case: No/ / Yes/ / Explain:

REPORT PREPARED BY WD.

Figure 1B. Reverse side of card shown in figure 1A.

CODE A (top numbers of card)

TYPES OF PATIENTS 1-4
1. Military
2. Veteran
3. Civilian
4. Females in military service

ADMISSION DIAGNOSIS 5-10
5. Minimal
6. Moderately advanced
7. Far advanced
8. Pleural effusion due to tuberculosis
9. Other tuberculous lesions
10. Pulmonary cavitation present

DURATION OF TUBERCULOSIS ON ADMISSION 11-13
11. Less than 1 year
12. 1-3 years
13. 3-5 years

PULMONARY PATHOLOGY ON ADMISSION 14-18
14. New, exudative lesions
15. New, caseous pneumonic lesions
16. Old, fibrocaseous lesions
17. Mixed new and old lesions
18. Miliary tuberculosis
19-24. Reserved for future use

CODE ALPHA (types of military patients)
1. Regular Army
2. Air Force
4. Reserve officer
7. Enlisted Reservist

CODE B (bottom numbers of card)

TREATMENT EVALUATION 1-26
1. Rest only
2. Chemotherapy
3. 0-4 months
4. 5-8 months
5. 9-12 months
6. 13-18 months
7. 19-24 months
8. over 24 months
9. Drug therapy continuous
10. Temporary collapse
11. Pneumoperitoneum
12. Phrenemphraxis
13. Pneumothorax
14. Surgery
15. Excision
16. Thoracoplasty
17. Excision-thoracoplasty
18. Decortication
19. Other surgery
20. Temporary collapse preceding surgery
21. Excision
22. Thoracoplasty
23. Excision-thoracoplasty
24. Decortication
25. Other surgery
26. Other operations not listed
27. Co-operation: excellent or good
28. Co-operation: fair or poor
29. Reserved for future use

CODE C (left side of card)

PATIENT'S CONDITION ON DISCHARGE 1-3
1. Improved
2. Unchanged
3. Worse

DISEASE STATUS ON DISCHARGE 4-8
4. Minimal
5. Moderately advanced
6. Far advanced
7. Other tuberculous lesions
8. Nontuberculous disease

TYPE OF DISCHARGE FOR TUBERCULOUS PATIENTS 9-17
9. Treated to inactive stage
10. Discharged as "good chronic"
11. Inactive—no treatment required
12. Inactive—treatment for residuals
13. Transferred to other hospitals
14. Died
15. Irregular (un-co-operative patients)
16. Administrative
17. Other discharges

CODE D (right side of card)

MILITARY PATIENTS, ADMINISTRATIVE DISPOSITION 1-14
1. Line of duty—Yes
2. Line of duty—No
3. Line of duty, service aggravation
4. General duty
5. Restricted or limited duty
6. Permanent retirement
7. Permanent retirement to VA hospital
8. Temporary retirement
9. Temporary retirement to VA hospital
10. Expiration term of service
11. Expiration term of service to VA hospital
12. Others (Conv. Govt., et cetera) home
13. Others (Conv. Govt., et cetera) to VA hospital
14. Other dispositions not listed
15-16. Reserved for future use

Figure 2. Code numbers for punch cards.

were reviewed by a panel of four physicians. Entries were then coded (fig. 2) by cutting the appropriate holes at the margin of the card. By this technic a tabular analysis of the data was quickly performed. The statistical tables 1 through 7 illustrate the type of information that can be made readily available for the study of trends in the treatment of tuberculosis and for the tabulation of work accomplished for annual and other hospital reports.

RESULTS

During 1952, 1,423 patients were discharged from the tuberculosis service of Fitzsimons Army Hospital (table 1). There were 1,184 patients observed or treated for tuberculosis (table 2). Eighty-seven were judged to have been inactive on admission, 231 were transferred to other hospitals in keeping with Army retirement procedures, and 35 received administrative discharges because they became ineligible for military hospitalization. The results of therapy were not evaluated in these 353 patients. Active tuberculosis was present in 266 of these 353 patients. There were 28 patients with minimal disease, 123 with moderately advanced, 92 with far advanced, 17 with tuberculous pleurisy with effusion, and 6 with extrapulmonary tuberculosis. The remaining 1,070 patients will be discussed under the following five categories:

1. Patients without tuberculosis..... 239
2. Patients with tuberculosis treated until disease became inactive 541
3. Deaths from all causes..... 35
4. Patients with tuberculosis discharged as "good chronic"..... 24
5. "Irregular" discharges among patients with tuberculosis..... 231

1. *Patients without tuberculosis admitted with a diagnosis of tuberculosis.*

Two hundred and thirty-nine patients were admitted to this hospital with a diagnosis of tuberculosis by referring physicians, and it was subsequently determined that nontuberculous pulmonary disease, or inactive pulmonary tuberculosis with an associated disease, or no evidence of disease existed (table 3). These diagnostic problems constituted 17 percent of the 1,423 patients discharged. Most were asymptomatic. Most of the symptomatic patients presented a vague, nonspecific type of history, and only an occasional patient was acutely ill.

In spite of numerous studies, including exploratory thoracotomy in 31 patients (13 percent), the exact cause could not be established in many patients. Forty patients were discharged with a

diagnosis of pulmonary calcification and/or fibrosis of undetermined cause. Tuberculin, coccidioidin, and histoplasmin skin tests revealed multiple positive reactors and therefore frequently lacked diagnostic value in some patients. Stable roentgenograms over a period of many years were the most important single factor necessary to establish the diagnosis of pulmonary fibrosis.

TABLE 1. *Total number of patients observed, treated, and discharged from the tuberculosis service*

Diagnosis	Number of patients	Percent
Nontuberculous disease*	239	17
Tuberculosis	1184	83
Pulmonary	(1030)	
Minimal	(221)	
Moderately advanced	(507)	
Far advanced	(302)	
Pleural effusion	(115)	
Extrapulmonary disease	(39)	
Total	1423	100

*Admitted with presumptive diagnosis of tuberculosis.

TABLE 2. *An evaluation of the types of dispositions made of all tuberculous patients*

Diagnosis and dispositions made	Patients	
	Number	Percent
1. Discharged with maximal hospital benefit	652	55.0
Treated to "inactive stage"	541	45.7
Discharged as "good chronic"	24	2.0
Inactive on admission	87	7.3
2. Transferred to other hospitals	231	19.6
3. Died	35	3.0
4. Irregular (un-co-operative patients)	231	19.6
5. Administrative discharges	35	3.8
Total	1184	100.0

Mycotic disease simulating tuberculosis was found in 44 patients. Twenty-eight of these were proved to have coccidioidomycosis and 16 to have histoplasmosis. Assignment of troops in areas where these diseases are endemic has lead to an increasing awareness of the practical diagnostic problems involved.

TABLE 3. *Analysis of patients with nontuberculous disease admitted to this hospital with an original diagnosis of tuberculosis*

1. Infection and sequelas	
a. Fibrosis and/or calcification, pulmonary, cause undetermined	40
b. Pulmonary mycotic disease	
Coccidioidomycosis	28
Histoplasmosis	16
c. Bronchiectasis	24
d. Pneumonia, acute and subacute	19
e. Bronchopneumonia, chronic	15
f. Pleurisy with effusion, nontuberculous	4
g. Bronchitis, chronic	3
h. Abscess, lung	3
i. Pleuritis, chronic, nontuberculous	3
j. Lymphadenopathy, mediastinal	3
k. Emphysema, pulmonary	3
l. Paragonimiasis	1
2. Pneumonoconiosis (silicosis)	3
3. Tumors and cysts	
a. Neoplasm, lung	4
b. Bronchogenic cyst	1
4. Allergic disorders	1
5. Congenital anomalies and structural changes	
a. Achalasia, esophagus	1
b. Pneumothorax, spontaneous	3
6. Trauma	
a. Hematoma, lung	5
b. Fibrosis of pleura	1
7. Foreign bodies: aspiration	
a. Lipid pneumonia	1
b. Foreign body retained, left lower lobe bronchus	1
8. Blood, vascular and circulatory disorders	
a. Pulmonary embolism with infarction	4
b. Vascular anomaly, arteries, right upper lobe	1
c. Hemoptysis, cause undetermined	2
9. Disease unknown cause (sarcoidosis)	1
10. Artefacts, extrinsic shadows	0
11. Combined lesions	
a. Inactive tuberculosis with other pulmonary disease	7
b. Inactive tuberculosis with extrapulmonary nontuberculous disease	4
12. Unclassified and other lesions	
a. Observation, medical, pulmonary disease, none found	31
b. No pulmonary disease but extrapulmonary disease:	
Rheumatic heart disease	1
Abscess, muscle, left triceps	1
Osteomyelitis, acute, right humerus	1
Observation renal disease	1
Lymphadenopathy: nontuberculous axillary (cat scratch fever)	1
Pericarditis, with effusion, nontuberculous	1
Total	239

TABLE 4. *Type of therapy used in 431 patients with pulmonary tuberculosis who were treated until disease reached inactive stage*

Type of treatment	Minimal	Moderately advanced	Far advanced	Total	
				Number of patients	Percent
Medical measures	104	196	34	334	77.5
Rest only	5	0	0	5	1.1
Chemotherapy and rest	58	37	3	98	22.8
Temporary collapse, drugs, and rest	41	159	31	231	53.6
Pneumothorax	(0)	(2)	(0)	(2)	(0.5)
Phrenemphraxis	(2)	(1)	(0)	(3)	(0.7)
Phrenemphraxis with pneumoperitoneum	(0)	(5)	(1)	(6)	(1.4)
Pneumoperitoneum	(39)	(151)	(30)	(220)	(51.0)
Surgical procedures, drugs, and rest	24	55	18	97	22.5
Thoracoplasty	0	3	9	12	2.8
All resections	24	52	9	85	19.7
Pulmonary resection	(12)	(13)	(0)	(25)	(5.8)
Resection thoracoplasty	(12)	(39)	(9)	(60)	(13.8)
Total	128	251	52	431	100.0

Bronchiectasis (24 cases) was the third most frequent disease confused with tuberculosis in this series. Acute and chronic nonspecific pulmonary, pleural, and mediastinal infection and sequelas were present in 53 patients. Pulmonary paragonimiasis was proved in one soldier who had returned from Korea.

TABLE 5. *Un-co-operative tuberculous patients discharged in 1952*

Types of patients	Total dispositions of all types, 1952	Irregular discharges	
		Number	Percent
Military	649	12	1.7
Civilian dependent	160	40	25.0
Veteran	374	179	47.8
Total	1184	231	19.5

The remainder of the patients formed a heterogeneous group which are listed according to a classification of pulmonary disease which has proved to be useful at this institution.[1]

No disease or abnormality was found in 31 patients. Pulmonary or systemic symptoms coupled with minor variations from normal in the roentgenogram of the chest were the chief factors which led to hospitalization in these patients. Although unfortunate for this small group, awareness of tuberculosis on the part of the physician is to be commended because it will lead to recognition of early disease in a greater number of patients.

2. *Treatment of 541 patients until disease became inactive.*

This group includes 91 patients with tuberculous pleurisy with effusion, 19 patients with other forms of extrapulmonary tuberculosis, and 431 patients with pulmonary tuberculosis. Of the latter group, 128 patients had disease which was minimal in extent, 251 had moderately advanced disease, and 52 had far-advanced disease. The presence of pulmonary tuberculosis received precedence over extrapulmonary tuberculosis in classification for this analysis. The mean duration of hospitalization for patients with minimal disease was 13 months; with moderately advanced disease, 14 months; with far-advanced disease, 19 months. Most of the patients had had one to three months of hospitalization prior to admission to this hospital.

All of these patients were treated on a standard rest and rehabilitation program in which bed rest was prescribed during the period of active disease while ambulatory treatment and home care was permitted only after the patient reached the stage of

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TABLE 6. *Evaluation of 831 patients with tuberculosis undergoing definitive treatment*

Results of treatment	Type of patient			Total	
	Military	Veteran	Civilian dependents	Number	Percent
Successful (patients treated to inactive stage)	383	81	77	541	65.0
Failures	17	225	48	290	35.0
Irregular discharges	12	179	40	231	27.9
Deaths	5	28	2	35	4.2
"Good chronic" on discharge	0	18	6	24	2.9
Total	400	306	125	831	100.

"inactive disease" as defined by the 1950 National Tuberculosis Association Diagnostic Standards. This rigid criterion for discharge of patients undergoing treatment was met in 541 patients discharged in 1952.

Tuberculous pleurisy with effusion. Of 91 patients discharged with inactive tuberculous pleurisy with effusion, 72 received streptomycin-para-aminosalicylic acid therapy, and 19 were treated with rest alone. Decortication was performed on three patients. Moderate or marked roentgenographic improvement was noted in 88 percent of the group while none became worse. The mean duration of hospitalization was 12 months. No return to full-time employment for one year following discharge was advised.

TABLE 7. *Evaluation of 366 patients with moderately advanced pulmonary tuberculosis discharged*

Factor evaluated	Type of patient			
	Military	Civilian dependents	Veterans	Total
Number of patients	172	58	131	366
	Percent	Percent	Percent	Percent
Successfully treated	98	72	33	69
Failures	2	28	67	31
Irregular discharges	(2)	(26)	(61)	(28)
Deaths	(0)	(0)	(3)	(1)
"Good chronic"	(0)	(2)	(3)	(2)

At the present time all patients with tuberculous pleurisy with effusion are receiving combined drug therapy for a minimum of from 6 to 8 months. The immediate results of prolonged drug therapy and hospitalization are not readily apparent because the early therapeutic response is usually favorable in almost all patients treated by bed rest alone. However, previous experience at this hospital has indicated that abbreviated periods of bed rest alone are inadequate because in a group of 78 patients so treated for less than 6 months, 52.5 percent had relapses; and of 90 patients so treated from 6 to 12 months, 21 percent had a relapse.[2]

Pulmonary tuberculosis (table 4). The importance of rest therapy continues to be stressed to the individual patient with tuberculosis but was employed solely as a definitive procedure in only 5 of 431 (1.1 percent) patients with pulmonary tuberculosis

discharged in 1952. These five patients had minimal tuberculosis but current concepts indicate that *all* patients with active tuberculosis deserve antimicrobial therapy during some phase in their management. Rest and combined drug therapy, usually 1 or 2 grams of streptomycin every third day combined with 12 grams of para-aminosalicylic acid and/or 300 mg. of isoniazid daily, was the definitive treatment in 22.8 percent of patients treated until the disease became inactive.

A combination of rest, drugs, and temporary collapse procedures was employed in 53.6 percent of the patients. Therapeutic pneumothorax and phrenemphraxis have been largely replaced by pneumoperitoneum during the past five years at this hospital and the former were employed in only 11 (2.6 percent) patients in this series. Two hundred and twenty patients (51 percent) had pneumoperitoneum. In retrospect, it is believed that this incidence was excessive and it is anticipated that the prolonged use of drug therapy will decrease the need and indications for pneumoperitoneum considerably. Pneumoperitoneum apparently contributed little to the management of patients with minimal disease or those with lesions of long duration. Although it appeared to be a favorable adjunct for patients with moderately or far-advanced disease, the response was not dramatic and usually only slight in magnitude. Its role in cavity closure or its possible value in preventing future relapse is not measured by this evaluation.

Major thoracic surgical procedures were performed on 97 patients (22.5 percent) of those treated until the disease became inactive. Improvements in surgical technics and drug therapy have minimized operative mortality and postoperative tuberculous complications to the extent that considerably more patients are candidates for excision of localized cavitary or caseous necrotic foci.[3] Primary thoracoplasty was employed in only 12 patients (2.7 percent) while wedge and segmental resection or lobectomy was performed on 85 patients (19.7 percent).

3. *Deaths.*

There were 35 deaths in this series of 1,184 patients, an incidence of 3 percent. Five of these patients died following surgery. (Major thoracic surgery was performed on 150 patients discharged in 1952; thus, the surgical mortality was 3.3 percent.) Two were late surgical deaths resulting from empyema secondary to decortication, one was an early surgical death following pericardiectomy, and two deaths immediately followed surgery attributable to a blood transfusion reaction in one instance and bronchial obstruction and atelectasis in the other. Of the 30 nonoperative deaths, 8 were from nontuberculous causes. The causes of death in the remaining 22 patients who died from tuberculosis were as follows: tuberculous meningitis, 4; pulmonary insufficiency sec-

ondary to tuberculosis, 4; pulmonary artery thrombosis and cor pulmonale, 1; silicotuberculosis, 2; massive pulmonary hemorrhage, 1; and progressive tuberculosis, 10. None died of acute caseous pneumonic tuberculosis. Antimicrobial drugs are capable of controlling active infection to the extent that a great many patients survive for a long time only to die of complications or sequelas of tuberculosis such as pulmonary insufficiency, cor pulmonale, hemorrhage, subarachnoid block, and cerebral endarteritis.

4. *"Good chronic" discharges.*

Twenty-four patients (1.6 percent) received a "good chronic" type of discharge. All had intermittently positive sputum, were essentially asymptomatic, and could not be expected to manifest further improvement with prolonged hospitalization. An exact definition of "good chronic" is difficult, but the statement prepared by the Committee on Therapy of the American Trudeau Society gives valid reasons for maintaining this terminology at present.[4] No patient received this type of discharge unless he understood the contagious nature of his disease, had expressed a willingness to co-operate with public health officials, and had living facilities suitable for proper care and isolation measures.

5. *"Irregular" discharges.*

The "irregular" discharge rate of a hospital varies with local policies and criteria for discharging patients with tuberculosis. The types of discharge recorded at this hospital are: maximum hospital benefit (inactive or arrested by 1950 National Tuberculosis Association Standards, and "good chronic"), deaths, transfers, and administrative discharges. Any other discharge is termed "irregular." By these criteria, 231 patients with active tuberculosis left the hospital against medical advice. This constitutes 19.5 percent of the total tuberculosis dispositions (1,184 patients, table 5) and 27.9 percent of the 831 patients (table 6) who were under definitive care.

Tuberculosis is characterized by an inherent degree of chronicity and necessitates prolonged periods of hospitalization. This is true in spite of rapid strides in drug therapy which undoubtedly has cured more patients over shorter periods of time than previous therapy. Many patients become restless, homesick, and develop extraneous problems which tend to diminish insight to the seriousness of a disease which paradoxically permits them to feel well after a brief period of therapy. Throughout the years, it has been our policy to minimize these problems by supplementing the treatment program by education of the patient through use of chaplains, medical social workers, occupational therapists, and appropriate recreation.

From an administrative viewpoint we treat the following groups of patients: military, civilian dependents, and veterans. The different rates in the irregular discharge among the three categories is very striking (tables 5 and 6), particularly when all were treated by the same staff in the same institution. It is very low in the group subject to military discipline (1.7 percent) and highest in the veteran patients (48.7 percent) who enjoy some measure of independence because of pensions. The disease was less severe in the military patients, and therefore the above groups are not similar for comparison. The discrepancy may be minimized by selecting the 366 patients with moderately advanced disease (table 7) who were admitted for definitive therapy (administrative transfers excluded). Although the type of disease among the military patients was usually of more recent origin, an analysis of dispositions by success and failure is so striking that comparisons are meaningful. The over-all number of patients treated successfully was 69 percent. Ninety-eight percent of the military, 72 percent of the civilian, and only 33 percent of the veteran patients were treated to the inactive stage. The failures are directly related to the irregular discharge rate among the three groups of patients and indicate the seriousness of the problem of irregular discharges from tuberculosis hospitals.

DISCUSSION

Most of the patients discharged in 1952 were admitted to the hospital in 1950 and 1951 and therapeutic methods applied do not necessarily represent current concepts of management. This was a transitional period when almost all patients began to receive drug therapy; that is, patients with minimal disease and pleural effusion were no longer denied antimicrobial therapy. This change has evolved with the realization that drug resistance occurs in a distinct minority of patients receiving combined drug therapy. At this hospital less than 10 percent of the patients treated according to current concepts are known to harbor drug-resistant organisms.

This was also a transitional period with reference to duration of drug therapy. Only 49 percent of the patients with pulmonary tuberculosis received more than four months of drug therapy. While drug therapy was not used to its best advantage in this series, it is now the policy of this hospital to administer concurrently at least two of the three major antimicrobial agents (streptomycin or dihydrostreptomycin, para-aminosalicylic acid, and isoniazid) to all patients with active tuberculosis until the stage of arrested or inactive disease is attained. Recent results suggest that this will decrease the need for temporary collapse measures. The latter are now chiefly used for a cavitary lesion which has not yielded to rest and drug therapy in a person who is not a candidate for a definitive thoracic operation.

It is imperative that systematic steps be taken to study the long-range effects of the increased use and prolonged duration of drug therapy, excisional surgery, temporary collapse measures, and the need for protracted periods of strict bed rest. Such studies may be aided by the use of cards to record pertinent information on discharged patients. This system may point out trends and serve as a base line for follow-up studies.

Irregular discharges from tuberculosis hospitals are a serious problem throughout the United States. At this hospital 19.5 percent of 1,184 patients with tuberculosis left the hospital against medical advice during 1952. Many of these will not continue treatment in the home; instead, they will contribute to the vast reservoir of persons, known and unknown, who serve to defeat the tuberculosis-control program. Public education as well as the strengthening and enforcing of public health laws may be as important in the over-all picture of eradicating tuberculosis as the most profound advances in therapy.

We believe that the punch cards described will be useful for long-term follow-up studies of the treatment of tuberculosis.

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Medicine as it is known and taught today is largely concerned with disease in the civilized white man. When the world is considered as a whole the white men are a minority group, and civilized man is a recent phenomenon in history. The study of little-known races living in primitive environments in medically unexplored territory can be expected to reveal new manifestations of disease, if not new diseases, which may well prove important in the general advance of medical knowledge. Further study of the differences in the incidence of appendicitis in different West Indian island populations, for instance, might clarify the etiology of this condition. It is especially important that such work should be done now, since primitive ways of life and even the people themselves are in danger of dying out.

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THE PROBLEM OF THE HOSTILE RELATIVE

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IN a previous article,[1] the therapeutic interviewing of hostile relatives, with the aim of alleviating their hostility, was discussed. In this paper, the entire problem of the hostile relative is considered. The tendency is to consider these individuals an unfortunate administrative problem and to ignore the interpersonal relationship that can be established to alleviate the situation. Most psychiatrists have had some experience with this problem and have developed a way of handling it. In this particular study, a relevant factor was that the patients legally could not be committed to a psychiatric institution. Most of the patients were in the military service and subject to military regulations which, although adequate, do not have the authority of a legal commitment. The remainder of the patients were on a voluntary status. Thus, if the relative had any hostility toward the military, it was likely to be displaced onto the hospital.

This psychiatric problem has been treated indifferently in the literature. Some references to the hostility in relatives has been made by Strecker[2] in his discussion of mothers of servicemen in 1946. Other writers[3-6] have touched upon the problem but have not dealt with it directly. The reasons for this may be the hostile relatives themselves who have a drive to get to someone in higher authority to express their hostility. Frequently these persons start at the administrative level of a hospital, thus tending to avoid the clinical personnel. The hostile relatives are those who persist in making unreasonable demands on hospital personnel and whose hostility and anxiety are not relieved by the usual methods of reassurance.

This study includes all visiting relatives, during a two-year period, who insisted on seeing the chief of the Neuropsychiatric Service because of hostile reactions to the hospital. The term "relative" is used for one member of the family or for the entire family if they came together. They all had one common charac-

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teristic in that they objected strenuously to the hospital in some way. Relatives who had a great deal of hostility initially but who responded to the usual explanation of the professional staff were not included in this group. It was recognized that many persons could be expected to react aggressively to the mental illness of a close relative. This initial reaction was not classed as hostility because a visit to the hospital was reassuring when the hostile relative obtained factual knowledge of the patient's illness, the treatment given or anticipated, the attitude of the staff, the atmosphere of the hospital, and the expectation of recovery.

Although the hostile relatives showed many individual differences, they also manifested similarities which were typical of the group, such as their drive to get to a responsible administrator. This drive is very similar to the reaction seen in mothers who must do everything possible for their children and encourage them to be dependent. This need to be overprotective was based largely on feelings of rejection and guilt and was demonstrated in almost every situation. Even when it could not be demonstrated to the satisfaction of the relative, it was, nevertheless, observed by the physician.

MANIFESTATIONS OF HOSTILITY

These people wanted to talk about the hospital and about what was being done by the hospital to interfere with the patient's happiness. The patient's illness was generally ignored. The attitude shown by this group can be expressed in a composite statement such as "give me back my baby" or "let me protect my baby." Many of these relatives believed the return to the mother figure was all that was necessary to effect a complete and permanent recovery. In some of these families the patient refused to see the relative, and in others the patient accepted the visitor indifferently or sent him away. In such cases the hospital was sometimes accused of poisoning the patient's mind against the family.

The most frequent demand made was that the patient be released from a closed ward, which appeared unreasonable when it was made for a disturbed patient who had just told his wife to go away and that he never wanted to see her again. This situation is further distorted when the wife insists that being locked up is what is making the patient ill and that she will contact her congressman to get him released.

Another constant source of hostility was the Army's role in the origin of the illness. Relatives demanded either full recovery or full compensation for the illness because it was considered that the Army made the patient ill. Many well-educated relatives,

who might have been expected to know better, were very persistent. For example, a dentist insisted that his brother's manic depressive psychosis was due to army service, even when it was clearly established that the patient had had two attacks prior to entering military service. This relative wanted either complete cure with no more attacks or satisfactory monetary compensation. In the discussion of the case, it became evident that he felt guilty because he had been completely out of contact with the patient for several years and also because he had been embarrassed by the patient's conduct in an earlier illness.

TABLE 1. *Complaints of hostile relatives*

Complaint	Number
Patient kept on closed ward	53
Army caused patient's illness	44
Don't like the doctor	34
Patient needs a doctor, not a psychiatrist	18
Insistence on immediate discharge	19
Insisting on taking patient home on leave	14
Not enough privacy	14
Insists on private bath	9
Patient needs his clothing	9
Patient too sick to be discharged	6
Want pension for patient	7
Patient must be moved—sick, not crazy	13
Patient has been physically mistreated	6
Patient being poisoned by hospital	2
Nothing being done for patient	9
Miscellaneous (poor food, inadequate recreation, et cetera)	12
Total	269

The denial by relatives that the patient had any psychiatric illness manifested itself in several ways. In one instance, already mentioned, the relative believed the patient would be all right at home. Others were insistent that the patient had some physical illness or injury. Many relatives were surprised to learn that psychiatrists were physicians. They refused to accept the absence of any physical illness and not infrequently insisted that the patient be examined by a medical doctor. Because this had already been done, it was routinely suggested that the family physician or a local physician of known ability examine the patient.

Some of the hostility was related directly to the psychosis of the patient. One patient had told his relatives he was being poisoned by someone at the hospital, and they had accepted the entire delusional process. In another case the delusions of a patient that he was sprayed with live steam every night were accepted by the entire family. This family carried its demands to high legal and military sources to have this "mistreatment" stopped. In spite of the almost overwhelming evidence, they never became convinced that the spraying was delusional.

In these situations the complaints themselves were not necessarily hostile. It was the attitude behind the complaint, the persistence in doing something to "correct" the situation, and the need to go to top authorities, both military and civilian, which demonstrated the hostile reactions. The complaints have been tabulated (table 1) to indicate their variety.

All of the complaints which were directed against the hospital were investigated even when it was obvious that they were fantastic. It was a matter of policy to run down these alleged incidents, not in a punitive way, but on the basis that anyone might make a mistake. This policy of getting the facts allowed for investigation without adding to the anxieties and problems of ward personnel. Ironically, when a real problem came up, the relatives usually were not hostile but reacted with understanding. For example, two very disturbed patients impulsively became involved in a fight in which one suffered a bruise on his face. His family made no outcry but accepted a simple statement as to how it had occurred.

GENERAL CONSIDERATIONS

It had been observed that sometimes hostility diminished when the relative talked with a psychiatrist about the patient. An analysis of these interviews indicated that when the relative expressed his feelings about the patient he frequently mentioned in some way previous negative feelings toward the patient. When he was able to understand and accept his own hostility toward the patient, his hostile feelings toward the hospital diminished. As the relative became aware of these unanticipated feelings within himself he frequently discovered that he had been inconsiderate of the patient as a person. Consequently, the patient then became the important focus for his attention rather than the hospital. Frequently, the relative expressed guilt over his past behavior. In such cases action was taken to dissipate the guilt, because a guilty reaction would be only temporary and might be followed by rationalization and more hostility.

In dissipating this guilt, no long or involved interpretations or explanations were made. If the relative offered a seemingly reasonable explanation for his behavior, it was accepted as being the best he could have done at that time. For example, the father of a rather passive patient expressed his disappointment over his son's repeated failures and stated he had tried to help him by very active supervision and by doing things for him and, in turn expected his son to be successful. He hated the son because of his repeated failures. The interview began with the assertion that nothing was being done for the patient and that he, the father, was a man of action and expected just one of two things from the hospital, either complete recovery or complete retirement benefits after a few months. It was pointed out that the patient had had some trouble for a long time and that he must have caused considerable difficulty to his father in growing up. The father replied: "He was always a disappointment to me. He has failed at everything." He revealed in considerable detail how he had repeatedly intervened to help his son but it had never worked out. He eventually raised the question of whether or not he had been making a mistake in trying to help the boy. The explanation was given that his son had resented this supervision and had kept on trying only because of his love for his father. The father became aware of his interference in his son's life and was eager to co-operate. He saw that he had made his son dependent on him and that this dependence had caused hostility toward the father. The father left the interview to discuss with the son how he could help him to become independent. Son and father went on to work out a satisfactory relationship which was mutually helpful and contributed materially to the recovery of the patient.

INTERVIEWING TECHNIC

The relative was encouraged to describe his feelings toward the patient. The interviews developed a pattern which was flexible but covered certain pertinent information in each case. For instance, the relative was given complete freedom to discuss any matter at the beginning of the first interview. After a few minutes, the patient's name would be brought into the conversation. The relative was then asked about the patient and was guided gently into a discussion of how he felt about the patient. Inquiry of the relative's reactions to the patient while growing up brought out his feelings toward the patient. In many cases it was the first time that the relative had ever thought of himself in his role as parent, wife, or sibling. With many relatives this was enough; they were annoyed at the way they had pictured themselves and were willing to do what they could to modify their behavior. Finally, the relative was asked to come back for another meeting.

Once the relative had expressed some negative feeling about the patient, this feeling was accepted. He was immediately reassured that it was all right to have that kind of feeling and to express it. This was directed toward modifying the attitude of the relative and allowed him to feel that he was in a receptive, friendly hospital.

With the overprotective, dominating mothers this situation was rarely reached in one or two interviews. They were interested only in telling the story of what they had done and how they had sacrificed. On the other hand, there was a passive group, who having made their complaints, withdrew. They appeared to be functioning on an all-or-none basis. With both of these groups of mothers, attention was so tightly centered on their requests that a positive affirmation was the only answer they could accept or actually recognize. Because in most cases the requests could not be granted, it was helpful to work out some form of compromise. In order to avoid a futile power struggle, some suggestion could frequently be made which would satisfy the relative's need to assert himself and would, at the same time, benefit the patient. This often enabled the relative to feel accepted and to co-operate by speaking freely of his feelings about the patient.

RESULTS OF INTERVIEWING

From July 1950 through June 1952, 112 hostile relatives were interviewed (table 2). Of these 112, 91 were interviewed two hours or less and 21 were interviewed more than two hours at three or more interviews. Although the period of observation of the relatives was short, and was limited to scattered visits of a week or less in most cases and not over a period of six months in any case, 82 of the first group of 91 gained some knowledge of their interpersonal relation with the patient and were able to use it in establishing a more sound relationship for the future and were able to respond with co-operation and understanding. Nine of the 91 were not benefited by the interviews. Six of these were unaware of the problems as they existed; they reacted only to the fact that a loved one was being held in the hospital, which they believed was, in some way, deeply harmful to him. They demanded that the patient be discharged at once and refused to accept any other answer. It was impossible to establish any kind of rapport with them. Some of them accepted the delusions of the patient as real and others refused to admit that the patient had any illness. Attempts were made to obtain further interviews with three of these but without success. The remaining three relatives appeared to be satisfied with the entire situation and no hostility came out in any interview, but all were dissatisfied that the patient had not

made a complete recovery. They had discussed the future treatment of the patient co-operatively, and in one case, enthusiastically. However, their belief that the hospital had done a poor job was passed on through correspondence or in person to high military authority. One of these letters was written a full year after the patient was discharged. This group may be larger because dissatisfaction does not always come to light when it is indirectly disseminated.

TABLE 2. *Hostile relatives interviewed*

Progress	Interviewed 2 hours or less	Interviewed more than 2 hours	Total interviewed
Marked improvement	82	0	82
Slight improvement	0	15	15
No improvement	9*	6	15
Total	91	21	112

*Includes three who offered no hostility directly but wrote or contacted higher authorities.

In the group of 21 relatives, six remained as hostile as ever. Of these six, only one appeared to be without some definite emotional disturbance. Of the other five, three showed some paranoid tendencies and two had passive-aggressive personalities. Because no progress was made with these individuals in the first few interviews and as they had no real desire for interviews, they were considered as unchanged. The diagnostic impression made in five relatives was supported in every instance by material from other sources, such as the patient, the social history, and opinionated observations from other relatives.

In two of these paranoid situations, the entire family accepted the patient's statements and delusions completely. One psychotic patient had the delusion that he had been court-martialed and was in jail. He had been in difficulty for going AWOL but was transferred to the hospital as soon as his psychotic condition was recognized. The family saw no evidence of any mental illness. To them, the patient was in jail because he was on a closed ward. After several months, he improved and remembered his actual experiences but was unable to recall the delusional trial he had been talking about for many weeks. At this point, the family accused the hospital of drugging the patient to make him deny the trial. He was discharged to his own care, and the family still not convinced of his illness.

Fifteen relatives were interviewed at length as frequently as could be arranged, and some understanding of their personality structures was obtained. (The total time devoted to each varied from 10 to 84 hours.)

Five relatives in this group were overprotective. All five had established lifetime patterns of anticipating the needs and desires of the patients. This type of personality has been described at length elsewhere,[2] but an example of their characteristic behavior is worth reporting. Because many military patients have been away from home for a long time, the usual procedure is for relatives to come to visit the patient and perhaps stay a week; however, three relatives immediately dropped everything they were doing and came to stay. One of these, the older sister of a paranoid patient, moved to Washington and was at the hospital every day for several months. When her brother was to be transferred to another hospital, she insisted on visiting several hospitals before she found one that was acceptable to her. She assumed her role in these words: "It's my fault in a way. I encouraged him to come in the Army. Now that you have done this to him, the least I can do is devote my life to looking after him." It had become her mission in life to annoy and harass the people who were trying to aid her brother. She was seen for 30 interviews, with no change in her attitude. She repeatedly insisted on sneaking matches to her brother in a disturbed ward. She was warned, and then not permitted to visit for a few days. Consequently, she ceased this dangerous practice.

One individual in this group was the rather typical "henpecked husband." He came to the office, repeated his demands in a hesitant way, and was very tense. In view of this, he was asked about his family. He spent an hour praising his wife and her ability as a mother. It was suggested that she come to the next interview, but she did not appear. She never visited the hospital and yet was directing her husband in a campaign for which he was ill suited. He was continually demanding that the patient, a 24-year-old schizophrenic, be immediately discharged. The patient had asked that he be kept in the hospital a few more weeks so that he could be discharged to his own care rather than return to his family.

This was explained to the father, who was agreeable at first but became quite anxious within a few minutes. He started several times to ask a question. Finally, with encouragement, he was able to state that he felt this would be best for the boy but didn't know what he would tell his wife, who was insisting that the boy return home. The matter was discussed at length and finally he decided to tell his wife that he had been

told what was going to happen and had been given no opportunity to dispute it.

He revealed that his wife had always been very sure of herself and had managed things. He concluded with the statement that he would be glad to see the boy get away from home for a fresh start. Because the patient's mother never came to the hospital for an interview and as she dealt quite harshly with the father when he failed in obtaining her demands, it was assumed that this was her way of exercising her authority over her husband and that she had little, if any, real feeling for her son.

In working with these hostile persons, one fact was very evident. Relatives of psychotic patients tend to deny their hostile feelings toward the patient in his prepsychotic life. This hostility in many instances is completely outside the awareness of the relative. In other situations, the relative is aware of his feelings to some degree. All of the hostile relatives attempted to compensate for their hostility in some well-defined pattern of overprotection, projection, withdrawal, or denial. Once this displaced hostility (toward the hospital) could be recognized by the relative, it could, in most cases, be traced back to the patient. Then, when it could be seen in perspective, it could be dealt with by relatives who were mature enough to do so. The others found it unacceptable.

In an effort to determine if some of the more difficult relatives could be aided by intensive, prolonged psychotherapy, several were seen at length. One wife was seen for a total of 84 hours of interviewing because, although very hostile at first, she showed some slight tendency to understand herself. As her husband was a chronic patient who could be expected to live out his life in a hospital, a prolonged effort was made to treat her with psychotherapy.

CASE REPORT

This 54-year-old woman was the wife of an officer who, several days before admission, had attempted suicide by shooting himself in the right temple, performing a right lobotomy and a partial left lobotomy. He had been making an uneventful recovery in the station hospital at his duty station but had been transferred because of his wife's insistence and because she was a problem to the hospital personnel.

This became evident within a few minutes after the patient was admitted to this hospital. She announced that she wanted a cot brought to the room immediately because she would need it that night to sleep on. When informed that she could not remain on the ward overnight, she insisted on seeing the chief

of service the first thing in the morning. At that interview, she made many demands on the hospital. When these conditions could not be met, she announced that she would see the commander of the hospital and that we would hear from her congressman and some high ranking officers she knew. She returned daily after that but learned that if she were going to obtain anything for her husband it would have to be approved by his physician. Because she had a great deal of anxiety and guilt, she was permitted to come to his room and feed him outside visiting hours. The patient at first made rapid progress and within three weeks he was ambulatory and talking and joking with the other patients. He was mentally clear for present events but did not remember shooting himself. The suggestion was made to the wife that she should establish a home to which she could take the patient as he would soon be ready for convalescent leave. The wife was permitted at her request to break the news to her husband. The next morning, he had a generalized seizure and was unconscious for several minutes. He developed a hypostatic pneumonitis and was transferred to the Medical Service of the hospital. While there, he refused to move his right hand and leg. Neurologic examination findings were normal. A stormy convalescence followed. He was mentally and physically inert for several weeks but finally improved somewhat and was able to be up in a wheel chair. The wife was very unhappy about the situation with the Medical Service. From time to time she had requested consultations for various conditions which she believed her husband to have, and she said these consultations were not done. Usually the resident on the service would make an examination and find nothing. She insisted that her husband was being neglected. During this period she was being interviewed two or three times a week. At times the interviews were stormy because she insisted on seeking outside influence to force the hospital to treat her husband as she wished him treated.

Finally she was told she could see her husband only during visiting hours. She was encouraged by the therapist to accept this to see if her husband would improve without her. She was seen daily during this period. Her husband improved again and made enough progress in a few weeks to again consider sending him home. The matter was mentioned to him rather than to his wife, but it had the same effect. Within a matter of hours he had another seizure and a relapse without any apparent cause other than the stress of the thought of returning home. When he again improved, he was retired from the military service and transferred to another hospital. The wife remained in contact and was seen in several interviews since then.

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In interviews, this woman was unwilling to speak very much about herself. The first several interviews were merely tirades against the hospital, accompanied by hints and threats of her military and political influence and what she would do to see that her husband received what she considered proper care. Finally she was persuaded to talk about herself. She was very much alone and had more problems than she could possibly solve. She was an only child who had been raised in the "traditions of the Old South." She had been engaged to be married and without warning had been abandoned. She acted as though she were the one who had broken the engagement. She had married her husband after a short courtship but she was still in love with her first fiancé. She then proceeded to plan her husband's career. He must reach the top. She never missed an opportunity to do whatever she believed necessary to help her husband to advance. He possessed a great deal of ability but had no great drive to get to the top. Although he never admitted it, he apparently had no real urge to be a general officer. The wife, on the other hand, was motivated in order to justify her marriage. All went well as long as he received routine promotions and became a colonel. However, when he did not receive any higher promotions and seemed content, the wife experienced a great deal of anxiety. She would talk openly of how her husband was not being treated fairly and of how deserving he was. Her efforts to make people aware of this apparently were offensive. Finally, in a period of depression after it had become apparent to him and to everyone else except his wife that he was not going to be promoted, he shot himself.

At first the wife had no idea that she might have offended anyone or that her husband could have wanted anything different for himself than she did. Eventually she came to see things more as they were. This came about in part because of the way in which she reported experiences with her daughter. The daughter had been an only child and had been brought up "with every privilege" but on a very strict schedule. Consequently, she grew up with very ambivalent feelings about her mother. When the daughter married, the mother made frequent visits and tried to run both households. The daughter developed a way of becoming ill during these visits. The son-in-law was interviewed and verified this. He thought his mother-in-law had never matured and always had her own way. He believed that she needed psychiatric treatment and he wanted an overseas assignment because she had a disturbing effect on his family.

She had so much hostility toward the hospital that she had to ventilate it, and these interviews were her only method of release. As she learned that she was welcome to ventilate,

she gradually talked more about herself and less about the hospital. She eventually saw that her efforts to help her husband by threats and similar measures were unsuccessful. This was followed by an insincere overcompensation phase in which she praised everyone and gave presents to those concerned with her husband because she was still trying indirectly to manage his treatment. One day she said, "It seems no matter what I do, I offend people." The answer was confirmative. At this point, she left the office but phoned the next day for an appointment. At the interview, she raised the question as to why she behaved as she did. She stated that in her way she had been trying to help her husband and had not really meant to offend. It was pointed out that she had been extremely critical of some very able physicians and had acted as though she knew more than they did, and that this must mean she thought they were incompetent. She denied that and again angrily left the office. However, she returned in a day or two agreeing that the psychiatrist was right and she was wrong. However, at once she started another maneuver to get the psychiatrist to intercede with the medical service for an unnecessary consultation. The inconsistency of this was explained.

Her method of operation was one of declaring herself to be helpless and then appealing for help. She was looking for someone to take over all of her problems and work them out as she herself wanted them solved. Because this was an impossible approach, it did not work. She did, however, manage to learn a little about herself. At one time her husband was believed to be dying and she was almost elated as she reported this. The observation that she seemed happy about it took her by surprise, but she rallied and denied it. Later she admitted it and rationalized it on the basis that death would be better for him because if he lived it would have to be in one of "those terrible institutions" for the rest of his life. When she left the hospital after having been seen 84 times in interviews, she was exactly as she had been all along, as far as her personality was concerned.

Although no definite diagnosis was made in this woman's case, it was observed that she was a passive-dependent-aggressive person with marked immaturity. This case has been discussed at length because it has demonstrated that prolonged work with this type of person is usually not effective. She continued treatment in order to attempt manipulation of the hospital staff. When this was not effective she continued because she had nowhere else to go. Therapeutically, work with this woman must be regarded as a failure.

SUMMARY AND CONCLUSIONS

In March of 1952, the matter of therapy on a brief basis with hostile relatives was discussed at length with the neuropsychiatric staff. The value of talking about himself and how he felt about the patient was explained, and numerous examples were given. The entire staff responded with interest and accepted these principles for dealing with hostile relatives. In the following months the number of hostile relatives referred to the chief of service had fallen to one a month, whereas before the staff started this type of work it had averaged about two per week. None of the relatives seen in this last part of the series could be helped by interviewing. They were, without exception, persons whose emotional disturbance was so deep that it was impossible for them to be aided by brief psychotherapy.

This demonstrated that the interviewing need not be done by any particular individual but that this important interaction could take place between any trained psychiatrist and the relative. What really was effective in the interview was the realization on the part of the relative that he was hostile toward the patient. When this could be seen, most relatives were willing to reorient themselves and take the necessary action to modify their relationship with the patient. Many times this was accomplished in a few interviews with a psychiatrist. If results were not favorable after a few interviews, prolonged psychotherapy was necessary, although the results sometimes were discouraging.

It was observed many times that the modification of the relative's attitude created a new type of relationship for the patient and his family. This was of great assistance in treating the patient and enabled several patients to achieve real independence which had never before been possible. Thus this type of interviewing appears to be of value as it favorably influences the prognosis of the illness.

In the cases in which the true meaning of the hostility toward the hospital was not revealed to the relative, no change in attitude occurred and the treatment was not as effective. In this situation, it may be speculated that the patient unconsciously chose to remain in a hospital rather than return home where he was not loved.

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Wound Healing

How many of us stop to think why it is that an open wound almost invariably remains free from infection, even when it is grossly contaminated? The reason is that the body fluids, blood and serum, flush the wound of dead and necrotic material, and at the same time make the environment undesirable for bacteria. It is only during this initial or exudative stage of wound healing that infection occurs. Sutures placed in a wound at this time prevent the flushing action of these tissue juices and encourages the production of bacteria. During the last war the medical advisors to the Armed Forces, who undoubtedly were men of vast surgical experience, issued a general order that all wounds should be left open until they could be properly repaired. Thousands of young lives were saved because of this order * * *.

Because of modern refinements in technic and anesthesia, and because men are taken at an early age and trained in the art of surgery, each succeeding generation of surgeons is better in all phases of surgery. These surgeons know the role the antibiotics play in prevention of infection, but they also know that the living cell is still the greatest barrier to infection. They have the same respect for the single living cell as they have for the entire mechanism, be it asleep or awake. They know that unnecessary injury to one cell might be followed by death of the entire part.

—PHILIP A. CAULFIELD, M. D., and
HOWARD S. MADIGAN, M. D.
in *American Journal of Surgery*

Control of Diabetes

The individual who escapes smallpox, diphtheria, and typhoid deserves no credit because his good fortune is largely due to governmental health regulations. This does not hold for diabetes because freedom from it in those hereditarily predisposed depends to some extent on the individual's avoidance of that contributory factor—overweight. The control of diabetes is dependent on a rigid regimen of diet, exercise, and insulin—morning, noon, and night—all the length of one's days.

—ELLIOTT P. JOSLIN, M. D.
in *Postgraduate Medicine*

ACUTE ANXIETY REACTION VERSUS "BLAST CONCUSSION"

CHARLES S. MULLIN, Jr., *Commander, MC, USN*

MANY men develop varying degrees of confusion and anxiety following exposure to an unexpected nearby explosion in combat. Some become ineffective and develop headache, "dizziness," areas of amnesia, startle reaction, and persisting anxiety following withdrawal from the danger situation. There may be secondary "anxiety control" symptoms of an hysterical nature, established immediately or within a few hours or days. This is the familiar "shell shock" of World War I.

In World War II and in Korea, this syndrome has been widely and somewhat compulsively referred to as "blast concussion," implying a disturbance of brain function directly due to blast effect.

One hundred and fifteen marines, in whom this condition had been diagnosed by battalion and regimental medical officers, were transferred to a forward medical company in my care during a two-month period of the Korean campaign. Following their evaluation, only 10 of the group were regarded as representing probable cases of blast concussion (cerebral). The others were believed to be suffering from the effects of an acute traumatic "neurosis." Since returning to the United States, I have observed several hospitalized patients with this syndrome who were treated with the assumption that their symptoms were the result of the continuing effect of brain injury.

The problem is important because of the temptation to evacuate these casualties rather than treat them forthwith as acute anxiety reactions with a fair to good return to duty potential. It is important after their evacuation to rear hospitals because of the undesirability, from the point of view of both doctor and patient, of treating a man with a neurosis as one with brain trauma.

EVIDENCE AGAINST "BLAST CONCUSSION"

It appears that the tendency of many medical officers in the field to regard this condition as representing a "blast concussion" is encouraged by the presence of such symptoms as pressure head sensations or headaches, transient tinnitus, and "dizziness,"

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following possible bodily injury from an explosion. The work of Simons and Wolff[1] suggests that the commonest form of headache following head injury is extracranial in origin, caused by a sustained contraction of scalp musculature related to emotion and/or to stimuli arising from areas of extracranial soft tissue damage. The comparative frequency with which these headaches are associated with areas of tenderness about the scalp and with stiffness of the neck suggests that those "outside the skull" factors may be important in the genesis of this particular symptom. In several of this group of so-called blast concussion cases procaine was injected into the scalp musculature at points of local tenderness, and every patient obtained partial or total relief of the headache, at least temporarily.

The history of many of these patients indicated that after the blast was experienced, they recalled being thrown or physically shaken. It is possible that many patients sustained an external injury of the head and neck. The initial "dizzy" sensations are not true vertigo. Simons and Wolff believe this symptom is, in most cases, of extracranial origin.

These manifestations do not appear to reflect the essential pathologic condition. The typical picture also included tremulousness; all the psychologic evidences of anxiety such as tachycardia, dilated pupils, and increased respiratory rate, and feelings of physical and emotional depletion, combined with a pervasive apprehensiveness, startability, and preoccupation. These manifestations are considered basic but were often associated with varying degrees of dissociation of consciousness, patent hysterical symptoms, amblyopia, paralysis, mutism, rigidities, hyperventilation with varying degrees of tetany, infantile regressive phenomena, and amnesia for personal identification.

Other considerations tend to focus attention on the overwhelming influence of emotion in the production of this syndrome at the expense of the assumption that an external "physical," cerebral insult is the primary cause. Extreme degrees of preoccupation and dissociated states of consciousness are sometimes seen, but the total dullness of apprehension of the environment, the disorientation (in the absence of dissociation) characteristic of confusion after head injury, is not common. The patient may appear to be entirely out of contact with his surrounding but remain keenly alert to any sound remotely suggestive of danger.

CLINICAL OBSERVATIONS

Retrograde amnesia was rare. In the majority of patients there was some recollection of the moment of impact, the sound of the explosion, the "flash," the sensation of the "blast," the feeling of dirt and debris against the body, and of being physically shaken or thrown. Transient "dazing" or confusion was invariable. Clear

evidence that unconsciousness followed the explosion was lacking in the great majority of instances, although patchy amnesic lacunae and "blackouts," minutes to hours after the precipitating event (often in evident connection with a scene of carnage revealed when the man had begun to "collect" himself) were fairly common. Often, however, the patient gave a fairly clear account of everything that had happened to him.

Bleeding from the orifices was uncommon. Mild epistaxis occurred in about 10 percent of the entire group. External bleeding from the ear was seen in only 3 of the 115 cases. Perforation of the tympanic membrane was observed in 8 cases. Injection of the tympani was more common, but in most cases the drums were normal. In two patients with perforated ear drums, probably due to blast, who had not been admitted for psychiatric treatment, significant anxiety was absent and their complaints were in reference to their ears. A cursory neurologic examination was negative in all patients (105) who were believed to have an acute anxiety reaction, although nystagmus was tested for in only about a third of this group.

The few patients who complained of pain in the chest or abdomen appeared to have muscular strains and bruises rather than intrathoracic or intra-abdominal injuries. Three patients stated they had "spit up" (not coughed) blood-streaked sputum, but there was no evidence of hemoptysis. One patient claimed to have vomited blood, but there were no other findings to indicate injury to intra-abdominal organs; and another reported he passed bright blood by rectum, but was found to have large bleeding hemorrhoids. If the postulated brain injury were due to the effect of the blast, one should expect to find more evidence of damage to intrathoracic or intra-abdominal organs, which would seem more vulnerable to blast effect than an organ enclosed in a bony, cushioned cage.

PRESERVICE TRAUMA

In most cases (but by no means all) the patient's history prior to entering the service revealed that his psychologic adjustment had not been wholly satisfactory. A history of frequent, mild to moderate headaches, "nervousness," or intimations of emotional immaturity prior to enlistment was common. The more obvious was the evidence of preservice instability, the more serious and enduring were the manifestations of the syndrome. Furthermore, the physical and/or psychologic condition of the men in this group at the time of the injury, irrespective of the preservice personality, was apt to be adverse in one way or another. There may have been evidence of increasing and unwonted combat anxiety for days or months before the incident; close buddies had been killed or wounded and the recollection was still poignant.

A prolonged and severe fatigue state or a current debilitating gastrointestinal infection might be present. Sometimes there had been recent disappointment in rotational expectancies with consequent impairment of motivation and personal morale (this was very common); certain important supporting figures in the group had become casualties, or various extramilitary worries were present. All these observations would have more validity if a controlled interrogation of wounded in action admissions without an obvious neuropsychiatric component had been set up, but they are at least suggestive in the light of the other evidence.

Finally, it is probably significant that this traumatic syndrome is rarely seen in officers—at least not to a degree requiring admission to the hospital. Over a six-month period, only one officer with this condition out of about 180 bearing the diagnosis of blast concussion was admitted. The ratio of officers to men in the actual combat area was about 1 to 30. It seems fair to assume that the combat officer is more "stable" in the sense that he is apt to be more resistant to anxiety or better able to control it than the average enlisted man, by virtue of his more rigorous selection, and that there is some relationship between this relatively greater stability and his negligible liability to the syndrome.

DISCUSSION

On the basis of the foregoing observations it appears that this is a condition which, in its essence, bears a closer relationship to neurosis than to cerebral trauma. It seems likely, as has been pointed out by others, that in the initial phase the condition represents a direct "primitive" overaction of complex stress-response mechanisms to sudden "dangerous" excitation. The hysterical, dissociative, "pseudopsychotic," and regressive phenomena seen in the earliest stages are considered secondary manifestations of "instinctive" anxiety-defensive operations. It is believed that many of the later, and perhaps overshadowing symptomatic and behavioral manifestations, occurring after days, months, or years, are related to previous, pretraumatic conflicts and needs respecting hostility, dependence, guilt, self-realization, or sexual adjustment that have been revived and maintained because of the enhanced psychologic vulnerability to the original trauma.

The question as to why some are seriously affected and others escape this disabling response to sudden threat can be answered only in the most general terms. The evidence suggests first, that men who develop this condition seem less "well adjusted," that the more obvious the psychologic "weakness," the more severe and persisting the illness; and second, that the syndrome is more apt to occur when adverse conditions are present, *e. g.*, physical exhaustion, loosening of group identification, death of a buddy, or prolonged combat experience.

SUMMARY

Of 115 consecutive patients bearing a diagnosis of blast concussion (cerebral), admitted to a forward medical company in Korea, 105 appeared to be suffering mainly from a form of acute anxiety. The evidence presented indicates that this acute syndrome, resulting from exposure to a nearby explosion, is usually best understood as a psychologic reaction to overwhelming "threat," rather than as the primary consequence of brain injury.

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Fear vs. Anxiety

Let us differentiate fear from anxiety. Fear is the emotional response to recognized external danger and is accompanied by physiologic changes. Anxiety is the emotional response to partly or wholly unrecognized internal danger and is often accompanied by physiologic changes. Fear and its accompanying physiologic alterations constitute a reaction designed to meet the external threat.

—HENRY P. LAUGHLIN, M. D.
in *Medical Annals of the District of Columbia*

"War Neuroses"

The fundamental basic pillars of the neuroses in war are based on the drive for self-preservation with its affective aspect, fear of death, and on the residues of the Oedipus complex present in all in varying degrees, particularly the sense of guilt deriving from a fantasied murder in the past. Every adult has within him the precipitates of the Oedipus complex, of infantile sexuality, and hence has a certain neurotic potentiality which varies with the individual. These are basic facts. Given these, combat may provoke symptoms of the psychoneurosis called "war neurosis." In view of the fundamental nature of the fear of death present in all, and the considerations pointing out its neurotic structure, it is obvious that "combat fatigue" is totally misleading, that "operational fatigue" is equally so, that "traumatic" and "war neuroses" are closer descriptions of the syndrome. However, I wonder if the neurosis is not more cogently expressed in the term "death anxiety neurosis" which, while not a pleasant term, is nonetheless more completely descriptive and accurate than any of the others.

—JOSEPH D. TEICHER, M. D.
in the *Journal of Nervous and Mental Disease*

A CHILD GUIDANCE CLINIC IN AN ARMY HOSPITAL

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THIS article is a résumé of the first four and one-half years of the functioning and practices of the child guidance clinic at Brooke Army Hospital.

Scheibel et al.[1] stressed four factors leading to the establishment of such a clinic: (1) Family stresses involving military personnel directly and adversely affecting the morale and efficiency of the individual and his functioning in his unit; (2) constantly recurring problems noted in the neuropsychiatric outpatient clinic involving children but without adequate personnel and technics available for their treatment; (3) the recurrence of pediatric problems involving emotional and interpersonal stresses which the pediatric staff believed needed more specific evaluation and treatment; and (4) the existence in the area of several large Air Force and Army bases served by this hospital.

In addition to the foregoing, other important factors played a vital part in the establishment and enhancement of the child guidance clinic: The clinic provides opportunities for essential training and experience of clinical psychologists, psychiatric social workers, psychiatrists, and other medical personnel in community relationships and child psychology. The standard operating procedure of the clinic crystallizes the team concept in the use of the varied disciplines in medical and supporting services.

Four years of child-guidance practice has borne out the need for and desirability of having such a clinic in this location. Using only two half-days of clinic time per week and with a limited staff, the clinic has handled nearly 700 referrals, these referrals coming from an ever-widening geographic area. This figure represents only the number of cases referred. When one considers that each case involves two to four members of the

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family unit, two things become obvious: The clinic has actually treated from 1,500 to 1,800 persons, and it is, in strict reality, a *family* guidance clinic.

CHILD-FAMILY-SOCIAL RELATIONSHIP

The importance of this latter concept and its place in the philosophy of the clinic cannot be overemphasized. It is a fundamental tenet of child-guidance practice that the child and his problems cannot be isolated from the sociofamilial matrix in which he operates. No child is reared in a vacuum. Physical factors, basic and learned drives, social learning and awareness, learned habit patterns, organic illnesses and the reaction thereto, parental attitudes, school pressures, in-group demands, and financial and social restrictions strongly influence the unique patterning of each child's reactions to the demands of life.

While, in many cases, a child's behavior and motivations may be altered by treatment directed solely at him, treatment will usually be more economical and enduring if it includes not only the child, but also his interrelationships with his family and other intimate environmental units. Of these, the family is the most important and most accessible to treatment. "The primary orientation of the clinic has been toward the problem *situation* rather than toward the problem *child*."[1] This general philosophy is implicit in the remainder of our discussion.

ORGANIZATIONAL AND FUNCTIONAL RELATIONSHIPS

Available during the two half-days of clinic time each week are one or more psychiatrists, neurologists, pediatricians, psychologists, psychiatric social workers, speech pathologists, and a capable secretary and receptionist. The services of the electroencephalographic and other laboratories, head specialties clinic, the physical medicine and cerebral palsy clinic, and other hospital facilities are available when needed. The physical needs of the child guidance clinic consist primarily of office space, a play-therapy room equipped with a one-way-vision mirror and sound equipment, and sufficient toys and play material for diagnostic and therapeutic sessions.

Both structural and functional aspects of the clinic might best be clarified by following a case through it. Thus, a mother, having been requested by a school teacher to bring her child to the clinic, will first talk to the secretary who obtains a brief family history and arranges an appointment with the psychiatric social worker. At the first interview, a full explanation of clinic procedure is given and the parents' willingness to participate is determined. At this appointment, the mother, without the child, is given time to describe the problem, to give some of the fundamental family problems underlying and related to the chief com-

plaint, and to give her reactions to it. The number of sessions devoted to this varies from one to three. After these sessions a decision is made as to the applicability of clinic procedure in the particular case. Once accepted, appointments are made with the pediatrician, psychologist, and psychiatrist. Physical and psychologic examinations of the child (including intellectual evaluation, appraisal of personality dynamics, and specific achievement testing) are completed. The psychiatrist then interviews the child and one or both of the parents, paying attention to important areas indicated in other interviews.

Perhaps the most important single meeting of the series, the weekly staff conference, then takes place. Here, staff members present their findings and recommendations. Dynamic factors underlying the problem are brought to a focus, further investigation is discussed, and therapy aims and methods are outlined. At this meeting the specific plan or disposition is decided upon. Here the child may be referred to other agencies for further diagnostic work or taken on for treatment. It may also be decided that the parent represents a clear psychiatric problem which could best be handled by the neuropsychiatric clinic. The personnel to be used in treatment depend on the goals decided upon in conference. Goals vary tremendously. Infantile speech in a seven-year-old child may take a few hours of the speech therapist's time with a social worker concurrently working through some of the dynamics with the parent or parents, and the problem resolved in few sessions. Again, a withdrawn young adolescent taking refuge in daily fantasy episodes, with marked school and social difficulties, may require a relatively intensive course of treatment covering many months. More frequent are the cases of healthy children rebelling against the restrictions and demands of unyielding parents, in which the treatment emphasis must be placed almost entirely on the parents.

Assignment of patients to staff personnel is a matter of some importance and interest. The number of workers with training and experience in dealing with the problems of children and parents is, in the Army situation, a potent variable. In many clinics, the social workers deal with the parents, and the psychologists and psychiatrists are occupied with the children. It is important, in view of the frequent transfer of staff personnel, to train and use each staff member in direct relation to his current experience and ability. The psychiatrist, as the co-ordinator and director of treatment activities, not only sees patients himself, but maintains general supervision. All treatment cases are reviewed periodically in staff conference and decisions as to further treatment or disposition are made there.

THERAPY VARIES

The specific technics used in child-guidance therapy vary with the type of patient, the skills of the staff, and the philosophy of the clinic. Many clinics with a strong psychoanalytic orientation may give intensive and prolonged treatment to a relatively small number of cases. Our policy, with a large shifting clientele and small staff, is to select patients who will benefit from a relatively short term of therapy, seldom more than 15 or 20 sessions. Technics include the usual forms of short-term therapy interviews, such as supportive, interpretive, nondirective, directive, and group therapy, the aim being to bring about insight and remedial behavior on the part of the parents or children. The aim of play therapy is to allow catharsis, to redirect unacceptable activities, to infer dynamics, to bring about a better child-adult relationship, and, frequently, to allow the younger child to work through some of his problems in a symbolic form, just as the older child and adult may work through his problems employing the symbolism of language. As necessary, various group technics have been used, that is, parent groups (after-duty hours), play groups, remedial reading, and speech therapy groups.

CIVILIAN AND MILITARY CO-OPERATION

The work has resulted in a variety of co-operative alliances with civilian and military agencies. A strong work relationship has been developed with the administrative and guidance officials of local schools enrolling dependents of military personnel. Similarly, there has been close co-ordination between the child guidance clinic and the juvenile courts, the Children's Service Bureau, and other welfare agencies in the handling of problems involving military dependents.

Rapport and co-ordination, on a larger scale, between civilian and military have been enhanced considerably by the consistent and enthusiastic participation of staff personnel in a variety of educational activities. Staff members have given many talks and participated in panels and seminars before church, parent, teacher, and other organized groups on a municipal, county, and state basis. Parent study groups in the field of mental hygiene and parental guidance have been conducted for military personnel stationed in and near San Antonio. Within the military structure, the clinic has filled a real need, as evidenced by the ever-increasing requests for consultation from practically every major Army, Air Force, and Navy installation in the Fourth Army Area.

From the inception of the clinic in August 1948 to 1 January 1953, 670 families had been referred for diagnostic and therapeutic work. As of the latter date, 630 of these cases had been closed, leaving 40 in varying stages of preparation and treat-

ment. The closed cases include "cures," all degrees of relief from symptoms, and families who moved from the area because of exigencies of the service.

REFERRAL DATA

Table 1 shows the increasing use of the clinic by various referral agencies. Certain trends can be noted. The first five months of operation (1948) saw 84 percent of referrals coming from the pediatric clinic, other services of this hospital, and from the parents involved.

This was primarily the result of local publicity and the marked interest of the pediatric service. The following year (1949), with continuing publicity to parents in Parent-Teacher Association groups, et cetera, brought an increase in parental referrals, a consequent decrease in pediatric referrals, and a greater use of our facilities by other intrahospital services. The next three years brought about a general referral increase from the geographic area served. The apparent decrease in parent referrals is partly accounted for by the increase in school referrals. With good school liaison, parent referrals entered the clinic sooner than they would have of their own volition. The passage of state legislation providing guidance workers in the school systems may also have increased the number of cases referred from schools.

REASONS FOR REFERRAL

Table 2 presents the primary complaints of the parents upon entry into the clinic. It must be stressed that the symptom upon which the parents have focused does not necessarily reflect the actual state of affairs in the family constellation. Many families present multiple problems which, for the most part, may be interrelated in cause; for example, a frequent combination is school difficulty, enuresis, and aggressive behavior. The parents may seize upon one of these as of primary importance, and disregard the others. Thus, many parents will be extremely concerned about school difficulties but consider enuresis only an annoyance. Others may be reluctant to present enuresis as an initial problem because of the stigma attached to it, even though it quickly turns out to be a prime reason for them to seek aid. Although enuresis accounts for only 5 percent of the initial complaints, its frequency as a symptom is much greater.

Similarly, the categories of aggressive behavior and school problems present tremendous overlap in practice. The designation of initial complaint is often a matter of whether it was instigated by the parent or teacher. The age of the child is also a factor in whether or not the case is categorized as a school problem. Frequently there is overlap between mental retardation,

TABLE 1. *Sources of referrals, by year*

Referring agency	1948		1949		1950		1951		1952		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pediatric clinic	44	55	61	38	50	34	41	27	45	34	241	36
Parents	16	20	48	30	65	45	47	31	25	19	201	30
Other services of Brooke Army Hospital	7	9	29	18	16	11	30	20	10	7	92	14
School	2	2	4	3	3	2	6	4	13	10	28	4
Outlying bases and municipal groups	11	14	17	11	12	8	28	18	40	30	108	16
Total	80		159		146		152		133		670	

TABLE 2. *Initial complaints*

	Number	Percent
Aggressive behavior (includes anti-social behavior)	155	23
School problems (scholastic and behavior)	151	23
Emotional problems (nervousness, fearfulness and withdrawal)	66	10
Speech problems	63	9
Mental retardation	51	8
Enuresis	35	5
Intellectual evaluation	32	5
Cerebral palsy and muscular defects	27	4
Psychosomatic problems (dermatitis, colitis, gastric ulcers, vomiting, asthma, chronic recurrent illness, hypochondriacal reactions, hypertension)	20	3
Convulsive problems	19	3
Evaluation for adoption or foster-home placement	13	2
Adolescent delinquency	6	-
Evaluation of blind and deaf for placement	6	-
Gross parental maltreatment	6	-
Gross sexual problems	5	-
Feeding problems	5	-
Habit reactions (tics, etc.)	5	-
Vocational guidance	5	-
Total	670	

school problems, and aggressive reaction to school and home pressures. Speech problems usually demonstrate one or more additional areas of difficulty in adjustment.

Some explanation is necessary concerning the absence of withdrawal and shyness as a separate category in our table. Actually a few of the cases listed under the heading of emotional problems are cases of marked withdrawal. Unfortunately the quiet and withdrawn child has a less irritant effect upon his teachers and parents and often is reinforced in his mode by being praised as a model of deportment, despite the belief that many withdrawn children are prone to serious behavior difficulties in later life.

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This state of affairs is gradually improving, particularly among teachers, as mental health knowledge is more widely stressed in the school curriculum.

Psychosomatic problems, referred from the pediatric clinic were from a small but interesting group of patients, and psychologic treatment of the parents and child was successful to a fair degree.

Evaluation of young patients at the cerebral palsy clinic often included a referral to the child guidance clinic for intellectual and speech evaluation and therapy for the child and for aid to the parents in adjusting to their particular family situation.

In discussing table 2, it was noted that the initial parental complaint may not reflect the prime problem in the family situation. The focus of attention by the parents on the child's reactions is to be expected and this makes it easier for the parents to seek guidance. Frequently, the first two or three sessions change the emphasis of the problem considerably. In some cases, this may be a gradual realization by the parents of their own problems. In other cases, the parents may be well aware of their own difficulties and will directly or indirectly state that their problems with the child gave them an avenue to obtain help for themselves. Sixty-five percent of the treatment sessions are spent with the parents. To demonstrate the often tenuous relation between original complaint and the final impression, a series of 10 consecutive summarized cases is presented. These reports are only descriptive and do not reflect the dynamic formulations on which treatment was based.

CASE REPORTS

Case 1. This eight-year-old boy was referred by the school principal because of grossly maladjusted behavior in school manifested by lack of co-operation, extreme aggressiveness toward other children, and poor scholastic work. The mother's countercomplaint was that the school was discriminating against her child and other children were always "picking on" him. To support this, the mother had surreptitiously taken pictures of playground activities. By frequent letters containing these photographs she approached the local school authority, the county superintendent of schools, and eventually the state board of education. Physical examination of the boy was within normal limits but psychologic examination indicated low borderline intelligence. Psychiatric and psychologic work-up of the mother showed a grossly demanding and controlling mother and wife and findings indicative of early paranoid schizophrenia. Stormy sessions with the mother ensued at weekly intervals for a period of three months, during which time she insisted upon the integrity

of her child and herself and persisted in her belief that the school was at fault. No work was attempted with the child. At the end of three months the mother withdrew from treatment, still having gained no insight into her child's difficulties, and still making demands exceeding his abilities. Brief consultation a year later, at the husband's request, revealed that the mother had sought the aid of a civilian psychiatrist, was better accepting her son's limitations, and was seeking special schooling for him.

Case 2. This 12-year-old boy was referred by the Red Cross because he was inattentive and un-co-operative at home and in school, was barely passing, had committed minor thefts, was enuretic, and was generally "out of hand." Physical examination was within normal limits. He had normal intelligence but showed considerable hostility toward male figures. Interviews with the mother revealed that her husband was overseas, she and her children were living with a strict and rigid brother-in-law who discriminated against her children, and she had taken a full-time job outside the home. She showed marked dependence on the sister with whom they lived. After two months some insight was gained, and the mother moved into a home of her own, quit her job, and devoted more time to her children. The boy's behavior improved considerably, family tensions were lessened, the mother expressed more confidence, and the case was closed.

Case 3. A 13-year-old girl was brought to the clinic by her mother, who complained that the girl was withdrawn and unhappy at school, "but is a perfect bully at home and browbeats everyone, including her mother." The mother compared her very unfavorably with her other daughter and had threatened the girl several times with institutionalization.

Physical examination revealed an obese, but otherwise normal girl. Laboratory studies failed to show any cause for her obesity. Her psychologic tests indicated a superior intelligence, but much emotional lability, strong feelings of inadequacy, and sibling rivalry.

Interviews with the mother brought out the presence of long-standing and severe tension between the parents, and pointed up the strong dependency needs of the mother, unsatisfied by her rather immature husband. During fourteen sessions some insight was gained, the mother's rejection of her daughter was somewhat reduced, and intrafamilial relationships were improved. Eight interviews with the daughter verified her deep feelings of inadequacy in social and school situations and re-emphasized her feeling of hostility toward her mother. At the closing of the case, the mother was complaining less about her daughter but was not completely satisfied. The daughter had improved to a greater extent; she had accepted invitations to school parties for

the first time and had actually enjoyed one. Although this case was closed comparatively soon, considering the depth of the mother's feelings, it was felt that optimum benefits from short-term therapy had been obtained and that gradual improvement would continue.

Case 4. A nine-year-old girl was referred by the school principal because of her lying, stealing, swearing, and grossly aggressive behavior. She had attended four schools during her first three school years, being removed from each because of her behavior.

Physical examination was normal. She was highly imaginative, extremely hyperactive, and had average normal intelligence. The examination protocols indicated much hostility toward the mother and a desire for more attention from the father. At a staff conference the decision was made to attempt very brief directive interviews, emphasizing home management and the possibility of changing schools again the following school year. Shortly thereafter, as the end of the school year approached, the mother desired to terminate the interviews, stating that there was much improvement in the child's behavior. The fallacy of the approach employed was made evident by the return of the mother at the beginning of the next school year complaining that the child's symptoms had only been intensified. Interviews with the mother were begun again, play therapy with the child was instituted, and she was transferred to a different teacher. The procedure was cut short by the family's departure for overseas and the case was closed as unimproved.

Case 5. This 10-year-old girl was referred to the clinic by her mother because of frequent headaches and "stomach-aches." For the previous five years the girl had had petit mal attacks, which were controlled for the last two years by phenobarbital. She had no behavioral difficulties at school. No organic basis was found for the somatic complaints. She had low average intelligence. A series of supportive sessions with the mother indicated sibling rivalry, a long-term tendency of the child to use illness as a means of controlling her mother, and considerable inconsistency in punishment by the parents complicated by the presence of a maternal grandmother in the home contradicting many of the parents' disciplinary measures. The mother was well aware of the use of illness, from the beginning, but was uncertain as to how to handle it in view of the past diagnosis of epilepsy. During eight sessions she was given support in developing a consistent disciplinary pattern, in dividing her time equitably between her children, and in developing satisfactory technics in dealing with her own mother. After a trial period of six weeks, a final interview showed considerable gain in consistency of at-

titude toward the children and a definite belief on the part of the mother that the family situation had reached a point where she could continue with confidence. The original somatic complaints had practically ceased. It was agreed that she should make contact with the clinic if she felt the need for help. No further contact has been made.

Case 6. A six-year-old boy was referred by the pediatric clinic with a history of birth injury, convulsions, and retarded development. The family had been previously informed that the child was retarded and found some difficulty in accepting this information. Nevertheless, they were interested in obtaining psychologic evaluation of their child and advice regarding school placement. Examination of the boy revealed physical co-ordination at the five-year level and dull normal intelligence. Interviews with the father revealed definite interparental inconsistency in treatment and attitudes concerning the child. The mother was over-protective, whereas the father overtly pushed the child beyond his capabilities involving strenuous athletic training in an effort to make him the physical and mental equal of his younger brother and voiced impatience with the child's tendency toward withdrawal. The father was resistant to clinic procedures and after the initial interviews made various excuses to cancel further appointments. He made a single contact with the clinic seven months later, showing slight concern over the negativism of the child, who was now in the same grade as his younger brother. The father had accepted in part the findings of the clinic but he was unable to verbalize the factors involved in not pushing this child excessively. His insight was superficial and his primary motives in returning to the clinic were to show the efficacy of his modification of the staff's recommendations and to secure further reassurance, which was given to his satisfaction.

Case 7. This five-year-old boy was referred from the pediatric clinic, where he was under treatment with cortisone for rheumatoid arthritis, with this comment: "Emotional aspects of the disease seem to be overwhelming the physical aspects and much of his difficulty lies with the emotional problem of the parents." His physical examination revealed typical early rheumatoid arthritis and he would break out with a rash whenever severely disturbed. Psychologic evaluation revealed normal average intelligence. The parents were expecting adult behavior from him and could not appreciate his present behavior as part of his normal developmental pattern. The mother projected her anxiety, insecurity, and conflicts on to the child. Supportive sessions with the parents, who gained some superficial insight, resulted in rapid remission of the child's physical signs and symptoms. The father then went overseas, and the child had an exacerbation of all complaints, spent most of his time in bed crying, and

the mother spent most of her time trying to get the father back from overseas. Within a week after returning to the child guidance clinic the child was more at ease and was again trying to walk. A short time later when the father's return was denied, the symptoms of mother and child were exacerbated. At this time the child did not respond to cortisone and the mother stopped clinic contacts.

With the father's subsequent return from overseas, the child had another remission. He now has fair range of motion in all joints, is going to school, and is becoming more and more independent, but still has erythematous rash whenever he has any illness or is disturbed. Patch testing in the allergy clinic was negative. The mother remained a domineering and controlling figure, who needs much support herself and changes physicians as rapidly as the child's symptoms change.

Case 8. A seven-year-old boy was brought to the clinic by the father who became alarmed over the teacher's report that the child was not doing well in school. He was physically normal and was above average in vocabulary, judgment, and language comprehension but slightly below average in visual motor co-ordination and form perception. He was predominantly left handed but slightly awkward in the use of either hand. The father had been an honor student, whereas the mother had just passed, though both graduated from college and had rather high ambitions for the child's intellectual accomplishments. School contact revealed that the teacher had probably exaggerated the boy's difficulty, that he was actually in the upper middle group even though his grades were slightly below those of the previous month. The father had been trying to make the boy play baseball right-handed. Because the problem had been exaggerated, the father was informed that his child was of average intelligence but that he should not push him and should let him use his left hand. Later contacts through the pediatric clinic showed normal school progress.

Case 9. This 11-year-old girl was referred by her mother because of night terrors, quieted only by getting into bed with her mother. Other signs of tension were nail biting and scratching. These symptoms had occurred seven years before when the father went overseas and had ceased upon his return. Physical examination was normal except for bitten fingernails and minor excoriated areas on the body and legs. The child was rather unattractive in appearance and was quite verbally aggressive but had average normal intelligence. Increasing difficulty in psychologic test items brought on defensiveness and hostility. She had marked feelings of inadequacy, hostility toward the siblings and mother, and was aware of parental tensions. The mother indicated that

the child had difficulty in peer relationships but was generally accepted and liked by adults. Both parents revealed rigid and unbending attitudes, expressed, for example, in their extreme concern over her unwillingness to conform to their schedule for piano practice. The parents felt that many persons with whom they dealt were undisciplined and lax in their attitudes, and had resolved that their children should learn self-discipline "through constant demands and requirements from without." As the interviews continued, the parents developed considerable insight into the meaning of their demands on the child, became much less critical and more accepting, and finally became very appreciative of the child's talents and of common child-parent interests. The night episodes had ceased to be a problem and the case was closed improved.

Case 10. This nine-year-old girl was referred by the pediatric clinic with a history of recurrent attacks of nausea and vomiting since age four. During the year prior to referral, there had been three prolonged episodes requiring hospitalization and parenteral fluids. An appendectomy had been performed four months prior to admission, only to be followed by another prolonged attack of vomiting. The girl was markedly dehydrated, lethargic, and unresponsive to questioning. After fluid and electrolyte balance was restored, psychologic examinations revealed her to be of very superior intelligence, striving for independence, and sensitive to impaired interpersonal relationships at home, particularly those stemming from the presence of the paternal grandmother. The child had adopted a considerable amount of the mother's worry over her husband, who had been in a combat zone, and was much aware of the mother's feeling of inadequacy in managing the home situation. Interviews with the mother pointed up rivalry between mother and child in personal appearance, a situation made less tenable for the child by her broken front teeth. The mother was aided in working through some of her own feelings of inadequacy, in establishing residence separate from the grandmother, and in developing better rapport with the child. Dental repairs were accomplished for the child. The case was closed as the mother demonstrated more self-confidence.

SUMMARY

A child guidance clinic was established at Brooke Army Hospital in 1949. The aims, principles, and rationale set forth by those who were instrumental in establishing and developing the clinic have been substantiated. Few changes have been necessary. The services rendered by the clinic have contributed materially to the morale and efficiency of the military personnel who have used these facilities. The hypothesis that family troubles reduce a worker's efficiency is well known in industry.

While the loss of efficiency in military surroundings is difficult to measure other than by casual observation, we can assume that improved adjustment on the part of the soldier-father in his family relationships improves his other relationships. The benefits accruing from the close teamwork of a group were gratifying.

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How to Write Badly

Some papers may be too short; lengthen them by explaining things that do not need explaining.

The cardinal sin of poor writing is to be concise and simple. A cloud of words may conceal defects in observation or analysis. Examples:

Bible: Render to Caesar the things that are Caesar's.

Poor: In the case of Caesar, it might well be considered appropriate from a moral or ethical point of view to render to that potentate all of those goods and materials of whatever character or quality which can be shown to have had their original source in any portion of the domain of the latter.

Concise: The dates of several observations are in doubt.

Poor: It should be mentioned that in the case of several observations there is room for considerable doubt concerning the correctness of the dates on which they were made.

Write hurriedly, preferably when tired Have no plan. The article will thus be spontaneous and poor.

—PAUL W. MERRILL
in *Scientific Monthly* 64: 72, 1947

One is fortunate to practice medicine in a community where his fellow physicians show respect for one another and abstain from open criticism or even insinuations against fellow practitioners. The doctor who stoops to criticize or cast suspicion on a fellow physician cheapens himself usually more than he damages the accused. Unfortunately he hurts the entire profession, for he undermines the confidence of a patient in the skill and integrity of his personal physician.

—ALFRED E. CHADWICK, M. D.
in the *Pennsylvania Medical Journal*

THE MANAGEMENT OF ERYTHROBLASTOSIS FETALIS IN A NAVAL HOSPITAL

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THE purpose of this article is to present a program for the management of the problems related to maternal Rh factor and fetal-maternal blood group incompatibility that we hope can be used in all military hospitals engaged in obstetric and pediatric care.

PRENATAL PHASE

When the expectant mother first registers at the prenatal clinic, in addition to other routine laboratory procedures, a specimen is drawn for blood grouping and Rh factor determination. Experience has shown that it is wise to repeat these tests, even though the patient has had similar work done elsewhere. Our results have been at variance with those obtained at other hospitals in many instances, especially with reference to the Rh factor.

Patients who are found to be Rh-negative are given an appointment for a regularly scheduled clinic day, when a member of the pediatric department presents the essential problems of Rh factor incompatibility. The subject is handled in such a way as to be readily understood by our patients, many of whom have a misconception of the problem. We consider that these discussions are an essential part of the program.

Rh antibody titers are checked as follows: Primigravidas who have never been given a blood transfusion have a specimen drawn for titer at about the thirty-second week of gestation. If sensitization is demonstrated, follow-up determinations are done at each subsequent clinic visit. All other patients are checked on the second visit and again at the thirty-second week, if the original test was negative. If Rh sensitivity is discovered, specimens are collected at each visit. A list of the names of all sensitized patients is kept on the nursery

From U. S. Naval Hospital, Chelsea, Mass.

bulletin board, and the pediatric department is notified of the admission of any Rh-negative patients. The list of sensitized patients is checked with each new admission, and suitable preparations are made at this time. In this way, the possibility of overlooking a potential erythroblastotic infant is minimized.

Every effort is directed toward having the patient deliver at term.[1,2] No deliveries are induced or cesarean sections performed simply because of the probability of erythroblastosis. However, some investigators consider that evidence of fetal distress occurring late in the third trimester in certain sensitized women may constitute an indication for either the induction of labor or a cesarean section.[2]

NATAL PHASE

Special precautions are taken to avoid anoxia in infants born of sensitized Rh-negative patients. The mother receives oxygen by inhalation throughout the second stage of labor, sedative drugs are restricted to a minimum, and delivery is usually accomplished under regional anesthesia with 1 percent procaine.

If it is fairly certain that we shall be dealing with a severely ill infant, the cord is clamped early, because there is evidence to suggest that the 100 to 125 cc. of blood from the placenta may overload the circulation in a sick baby. The cord is cut at least two inches from the skin margin, and a saline dressing is applied to keep it moist. A specimen of cord blood is obtained for grouping, Rh-factor determination, and Coombs' testing.[3]

A pediatrician attends the delivery when there is evidence of fetal distress during labor or labor is premature, and also if a cesarean section is performed or erythroblastosis in the infant seems likely.

POSTNATAL PHASE

All infants born of sensitized Rh-negative mothers are examined immediately by a pediatrician, especially for edema, jaundice, and hepatosplenomegaly. If any of these clinical findings are present or if the Coombs' test is positive, a complete blood count is done and repeated in accordance with the orders of the pediatrician who is on guard for an existing or developing anemia and is concerned with the relative number of immature red blood cells. If immediate treatment is not indicated, the infant's color is observed and recorded at 30-minute intervals for a period of 24 hours. At the first suspicion of pallor or icterus, the pediatrician is summoned.

THE ROLE OF THE LABORATORY

On this department devolves the work of performing the various indicated procedures. After routine testing for blood groups, all

Rh-negative specimens are tested, using Diamond's slide test.[4] All blood specimens which give a suspicious reaction are rechecked, using the indirect Coombs test. This relatively simple method of mass screening may be criticized because of the admitted advantages of the trypsin and plasma albumin tube methods; however, the shortage of trained laboratory personnel has precluded the use of these technics in our hospital. The slide test is simple and quick, and accurate when properly performed and interpreted. To our knowledge, we have never obtained a false negative reaction.

It is also the responsibility of the laboratory to insure that the pediatrician is notified of the detection of all sensitized patients and to prepare a written report for insertion in each patient's record.

FACTORS IN EXCHANGE TRANSFUSION

Factors in determining the advisability of exchange transfusion are:

1. Evaluation of serum bilirubin by the micro method is ideal,[5] but many hospitals are not equipped for this procedure.

2. Maternal Rh antibody titer of 1:64 or higher.[1, 6, 7] An Rh-positive, Coombs-positive baby of a mother with a titer of 1:16 is considered a likely candidate,[1, 7] but transfusion is withheld until the first signs of erythroblastosis appear.

3. Anemia at birth.[7]

4. Size of the liver and spleen.[8] Any newborn infant having an enlarged liver and/or spleen should be suspected of having anemia. The enlargement is usually in direct proportion to the degree of anemia.

5. Previous history.[6, 7] If the infant is found to be Rh-positive and if there is a history of a previous erythroblastotic offspring, either stillborn or liveborn, an exchange transfusion will probably be needed.

6. The appearance of early jaundice[8] within the first 24 hours of life. Sepsis must be ruled out if the onset of jaundice is in the first 24 hours.

7. Progressively deepening jaundice and increasing anemia following an initial exchange transfusion are indications for a second or a third exchange transfusion.

PREPARATION FOR EXCHANGE TRANSFUSION

When the decision is made that an exchange transfusion is necessary, the mother and, if possible, the father are informed of the existing condition, their written permission is obtained,

and the laboratory is notified. Because of the need for oxygen, suction, good light, and a surgically clean environment, we do all our transfusions in the operating room.

The infant is taken to the operating room in a warm incubator and oxygen is administered during the trip. Any standard-type infant basinette which can be kept warm may be used for the infant during the transfusion. Suction by means of automatic pump, rubber bulb, or mucus trap and catheter should be available. Breathing oxygen should also be on hand from a central supply, large tank, or anesthesia machine.

One unit of 500 cc. of blood is needed.[6, 10-12] Type O, Rh-negative blood[7] is used with 10 cc. of Witebsky[13, 14] substance added, although Diamond[15] prefers low titer O-negative female blood. We use blood from the American Red Cross blood donor center. If it is more than 4 days old, we obtain a donor from among duty personnel in the hospital. In connection with the controversial indication for blood from female donors, it is of interest to note that all of our donors were by chance males.

SPECIAL EQUIPMENT REQUIRED

The special equipment necessary[9] for an exchange transfusion costs about $15, and can be obtained from any medical supply house. It consists of two 20-cc. Luer-Lok syringes (stock No. 3-804-300, Armed Services Catalog of Medical Materiel), two 3-way stopcocks (No. LL/S, Becton-Dickinson Co. Catalog), a Tuohy adapter, rebored with 49-gage drill (C. R. Bard Co., 490 Morris Ave., Summit, N. J.), 1 umbilical vein cannula (Becton-Dickinson), and one 38-cm. length of "18-gage" polyethylene tubing (No. A2590 and A2591, Clay-Adams Co. Catalog).

Other necessary equipment, usually included in the standard supplies of any operating room, consists of a recipient transfusion set, umbilical tape, a metal tray for convenience of packing and storing the sterile set, one 10-cc. Luer-Lok syringe, 2 pieces of rubber tubing (one 6 inches long, the other 36 inches long), straight scissors, a 15-cm. stainless steel ruler, mosquito hemostats, 2 Monel metal basins, needles (No. 18, 19, 20, and 24 gage), 4 towel clips, 6 or more hand towels, 2 half sheets, gauze sponges, plain-tipped and toothed forceps, and a blunt metal probe.

ASSEMBLY OF APPARATUS*

Figures 1 and 2 illustrate the method of assembling the special equipment. At time of operation, 200 cc. of sterile saline and 1

*_Editor's Note:_ A simpler apparatus, used at the U. S. Naval Hospital, Bethesda, Md., omits the cannula and one of the stopcocks. Its proponents consider that it lessens the chance for clotting.

cc. of 1:100 heparin solution are added to each of the Monel metal basins. The polyethylene tubing is rinsed inside and out with this saline solution and inspected to make certain that both ends are square and smooth. Prior to inserting the tubing through the cannula, the rubber washer should be inspected for patency, because if the threaded end of the cannula is screwed down tight during sterilization, the rubber washer will become soft and the lumen will be narrowed. If the lumen cannot be

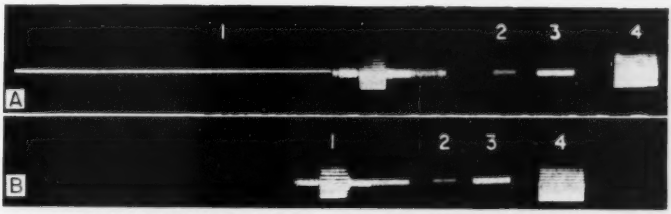

Figure 1. (A) *Umbilical vein cannula: (1) cannula, (2) rubber washer, (3) metal collar, and (4) knurled end.* (B) *Tuoby adapter: (1) Luer-Lok end, (2) rubber washer, (3) metal collar, and (4) knurled end.*

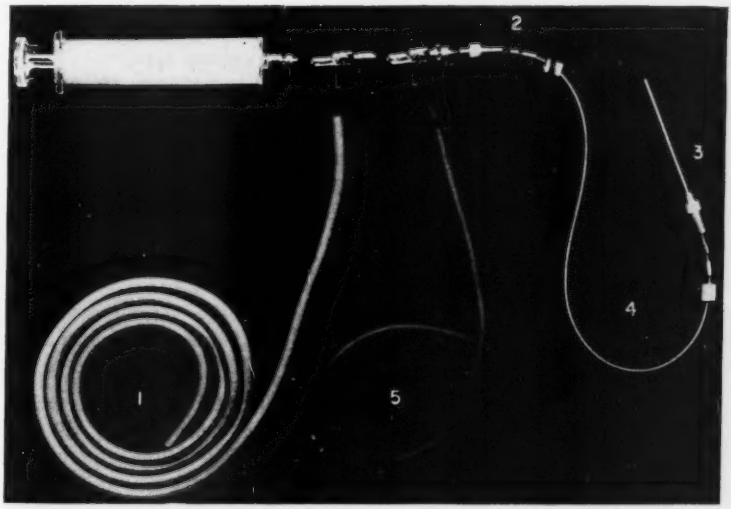

Figure 2. Transfusion set (exploded view): (1) tubing to waste bucket, (2) Tuoby adapter, (3) umbilical vein cannula, (4) polyethylene tubing, and (5) blood intake tubing.

opened by passing a probe through it, a new washer must be inserted. The plastic tubing should protrude about 0.3 cm.[9] from the end of the cannula and be fixed by just enough tightening of

the threaded end so that it will not come out if pulled. The other end is inserted through the Tuohy adapter with approximately 0.3 cm. of the tubing protruding. The two 3-way stopcocks are joined and attached to the Tuohy adapter with the polyethylene tubing protruding slightly from the lumen to help prevent clotting of blood. The 6-inch piece of rubber tubing is attached to the stopcock nearest the Tuohy adapter; the other end is connected with the blood from the recipient set. The 36-inch piece of rubber tubing is attached to the second stopcock and the free end dropped into a waste bucket. The entire system of plastic tubing is then filled with saline solution.

TECHNIC OF TRANSFUSION

After preparation of the patient, the cord is cut off square about 1 cm. from the skin margin. If it is completely dried out, it may be cut off flush with the skin. The umbilical vein is identified. The arteries, two in number, are thicker walled and protrude slightly on cut section and rarely bleed, while the umbilical vein is thinner walled, has a larger lumen and frequently bleeds. The cannula is then inserted into the cut end of the umbilical vein. In order to avoid pushing a blood clot ahead of the cannula, it is inserted about 2.5 cm., and gentle suction is continuously maintained while it is withdrawn. It is then gently reinserted as far as it will go. The progress of the cannula is usually stopped after it has entered about 2.5 cm., at the point where the vein passes through the peritoneal reflection. When this happens, slight caudad traction is applied to the cord and the cannula is alternately withdrawn and pushed forward until the forward course of the vein is located and cannulization can continue. When blood appears in the plastic tubing and can be withdrawn easily, the cannula is fixed in position.

At this point, the Tuohy adapter can be detached from the 3-way stopcock and held so that the plastic tubing is perpendicular to the abdomen, in order to measure the venous pressure with the ruler. Normally this is 6 to 7 cm. The adapter is then reconnected to the stopcock.

The technic involves alternate withdrawal and replacement of blood.[10] A working deficit is usually maintained, 20 cc. being the minimum. In general, the sicker the baby, the higher the venous pressure and the greater the deficit one should use. Blood may be exchanged in any volume according to the patient's condition. In the more acutely ill infants, it is probably best to exchange blood in smaller increments. The maximum increment should not exceed 20 cc. In order to facilitate the withdrawal of blood, it may be necessary to put gentle traction on the cord stump by pulling caudally on the tie around it. Sometimes it is also necessary to advance or withdraw the cannula slightly. The

procedure is continued until a total of one unit (500 cc.) of blood is used. Frequent shaking of the donor bottle is advised to prevent settling. At the end of the transfusion, the deficit is replaced[11] and, depending on the condition of the baby, an additional 20 to 30 cc. may be given.

One 20-cc. syringe is used at a time for both withdrawing and injecting blood. During the transfusion, it will be found that the syringe being used will become sticky and difficult to manipulate. By rinsing it in saline-heparin solution, it can be restored to normal working ease.

USE OF CALCIUM GLUCONATE

During the exchange, a portion of the patient's ionized calcium is bound by the excess citrate in the donor blood[9, 11] and the infant becomes irritable and develops a tachycardia. It is therefore recommended that a 10-cc. syringe, filled with 10 percent calcium gluconate, be available. One cc. of this solution may then be injected slowly into the umbilical vein catheter, either when the above signs appear, or routinely after each 100 cc. of blood are exchanged. Because calcium gluconate may cause coagulation, it is necessary to irrigate the plastic tubing with the saline-heparin solution both before and after the administration of calcium. During the injection of calcium gluconate, a constant check on the pulse rate should be maintained in order to avoid the development of marked bradycardia.

At the completion of the exchange, the infant is given 4 to 5 cc. of calcium gluconate[10] and 1 ampule of vitamin K intravenously. The cannula is then withdrawn and the cord vessels occluded by tightening and securing the tape with a square knot. A moist saline dressing is applied to the cord stump and continued until the possibility of a second exchange has passed. During the transfusion, an assistant should be available to aspirate the pharynx if necessary, administer oxygen through a cone or mask if needed, check the pulse, and be scorekeeper. The score sheet, illustrating a 5-cc. deficit, is given below.

Time	In		Out		Medication
	Amount	Total	Amount	Total	
1400 begun			10	10	
1402	5	5			
1403			20	30	
1407	20	25			
1409			20	50	
1412	20	45			

The infant is returned to the nursery in the incubator. Postoperatively, 30 mg. of sulfadiazine sodium per pound per 24 hours is given subcutaneously in divided doses every 8 hours and 100,000 units of penicillin are given once daily. This medication is continued for 3 to 5 days, according to the condition of the patient and the appearance of evidence of infection. The infant must be carefully observed for progressive anemia, jaundice, and increasing bilirubinemia,[16] indicating the need for a second or third transfusion. Evidence of tetany due to the binding of the blood calcium with the citrate of the transfused blood may develop. If this occurs, the patient should be given calcium gluconate intravenously. The infant is fed according to the routine for its weight and period of gestation. The full-term baby is usually discharged with the mother. Premature infants are discharged when their weights reach 5 pounds 8 ounces.

CLINICAL TRIAL

Fourteen exchange transfusions for erythroblastosis were performed between October 1951 and January 1953. The only death was that of a severely affected infant who died after 115 cc. had been exchanged. The remainder were discharged from the hospital without any evidence of residual defects. In all cases, blood from group O, Rh-negative males was used.

SUMMARY AND CONCLUSIONS

The co-operative efforts of the obstetrical, pediatric, and laboratory departments are essential for the effective management of erythroblastosis fetalis, but it is the responsibility of the attending pediatrician. The institution of the program is the responsibility of any hospital handling obstetrical patients. By the adoption of such a plan, improved obstetrical care can be given the prospective mother and better care of her infant is possible.

Large numbers of patients can be screened by the laboratory, without the services of highly trained and skilled technicians, by using a simple slide test which has proved to be rapid and accurate.

The equipment recommended for use in the treatment of the erythroblastotic infant is easily procured and relatively inexpensive. The described technic of replacement transfusion has the advantage of ease and comparative safety.

All large military hospitals should be prepared to do replacement transfusions on their patients.

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Army Hospital Personnel to Wear Identification Badges

Military and civilian personnel, who attend patients in army hospitals, will be required to wear identification badges of dark russet leather, according to an Army Medical Service administrative letter dated 30 September 1953. It is believed that when a patient can identify by name those who are entrusted with his care, he feels more secure. This practice is in connection with new procedures for preparation of the patient's bed card, both steps being taken better to develop mutual confidence between patient and hospital personnel.

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MASS TREATMENT OF ENDAMOEBA HISTOLYTICA CARRIERS

MUNEO YOKOGAWA, *M. D.*
DALE E. WYKOFF, *First Lieutenant, MSC, USA*
LAWRENCE S. RITCHIE, *Ph. D.*

IT is generally believed that about 10 percent of the Japanese harbor *Endamoeba histolytica*. Most persons with such infections are asymptomatic, and some question has been raised as to the value of treating them.[1] Nevertheless, most investigators believe that they should also be treated to lower the incidence of the disease.

From families in the villages of Mutsusawa and Tatomi, Yamanashi Prefecture, Japan, 241 persons harboring protozoa were selected for treatment. Diagnosis was based on five fecal examinations (formalin-ether concentration technic) per person. Each person was interviewed prior to treatment and his symptoms, if any, were noted. Those who were senile, under the care of a physician, or who had albumin and/or urobilinogen in the urine were excluded from the study. Carbarsone was administered the first week and chiniofon, the second week. Dosage is shown in table 1.

TABLE 1

Age group (years)	Carbarsone (first week)	Chiniofon (second week)
3 - 6	0.25 gram q. d.	0.25 gram t. i. d.
7 - 11	0.25 gram b. i. d.	0.50 gram t. i. d.
12 or over	0.25 gram t. i. d.	0.75 gram t. i. d.

Every three days the patients were interviewed and their symptoms and side reactions to the drug, if any, noted. Those who for some reason had not taken the drug were eliminated from the study. Five weeks and again seven months after treatment each

From the 406th Medical General Laboratory, U. S. Army. Adapted from a preliminary report by the authors in the *Medical Bulletin of the U. S. Army Far East*, vol. 1, pp. 124-125, June 1953.

Dr. Yokogawa is a member of the staff of the National Institute of Public Health, Tokyo; now at School of Hygiene and Public Health, Johns Hopkins University.

patient had five stool examinations. Of 124 patients infected with *E. histolytica,* 18 (15 percent) were excluded either because of inadequate therapy or incomplete follow-up. Of the remaining 106, only one was still infected five weeks after treatment. A survey seven months after treatment showed four (3.8 percent) with *E. histolytica.*

This treatment-failure rate is indicative of a high level of therapy efficiency. It is possible that, because of the small stature of the Japanese, the dosage of drugs may have been comparatively large. However, comparable results were reported with carbarsone and diodoquin (diiodohydroxyquinoline) for persons infected during the Mantetsu epidemic.[2]

An evaluation of results in relation to the benefit of mass treatment can best be done by comparing the September findings with the pretreatment findings. The incidence of *E. histolytica* in Mutsusawa village was 28.8 percent in January and 4.1 percent in September. The latter figure includes treatment failures, inadequate dosages, and reinfections. The corresponding figures for Tatomi were 13.5 and 2.2 percent. Ultimate benefits from mass treatment will depend on how quickly reinfections occur.

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Cardiac Arrest—the Greatest Surgical Emergency

Cardiac arrest is a major surgical catastrophe which may occur at any time in an apparently normal patient undergoing even a simple operative procedure. It is ominous, terrifying, and occurs without warning. There is no greater surgical emergency. Fortunately, it is of infrequent occurrence but is an emergency of the utmost importance to the operating surgeon. Whether there has been a marked increase in this condition in the past few years or whether the surgical profession has become more aware of it, is a debated point. Delay in recognizing this condition and, just as important, not instituting proper treatment immediately, means death of the patient. Accordingly it behooves the operating team, consisting of the surgeon, the assistant, and perhaps most important the anesthetist, to be constantly aware of this condition.

—W. H. PENNINGTON, M. D.
in *Journal of the Kentucky State Medical Association*

HEMOLYTIC ANEMIA COMPLICATING INFECTIOUS MONONUCLEOSIS

Report of Three Cases

MELVIN L. SAMUELS, *Captain, USAF (MC)*

ACUTE symptomatic hemolytic anemia has been reported in association with such infectious diseases as syphilis, tuberculosis, atypical pneumonia, salmonellosis, and streptococcal and staphylococcal infections.[1-5] The association of this complication with infectious mononucleosis was first suggested by report of a case by Dameshek,[6] in which additional factors of sulfonamide medication and cold hemagglutinins were present. Subsequently, additional isolated cases have been reported in the literature.[7-11]

In a series of 62 cases of infectious mononucleosis in a 12-month period ending 30 May 1953, three cases of complicating acute hemolytic anemia were observed. The Coombs tests and the trypsinized erythrocyte procedure were done. Albumin and saline titrations for agglutinins and hemolysins were not used.

Case Reports

Case 1. A 20-year-old airman, second class, was well until one week before admission, when he developed headache, anorexia, easy fatigability, backache, and low-grade fever. He was seen on sick call and was given aspirin, aureomycin, and a cough mixture. He returned to sick call several days later feeling ill and complaining of vomiting. Jaundice was noted, and the patient was then admitted to the hospital with the diagnosis of hepatitis.

The patient was well developed and well nourished but appeared acutely ill. Marked jaundice was present and large urticarial lesions were scattered over the chest and abdomen. Temperature was 99.2° F.; pulse, 92; and blood pressure, 124/80. Anterior and posterior cervical adenopathy was marked, and minimal axillary and inguinal adenopathy were present. The liver and spleen were not palpable.

From U. S. Air Force Hospital, FEAMCOM Air Base, Honshu, Japan. Capt. Samuels is now at Baylor University Hospital, Dallas, Tex.

Laboratory studies revealed a leukocyte count of 8,600 with 57 percent neutrophils and 43 percent lymphocytes, most of which were atypical monocytoid forms. Hemoglobin was 9 grams, the erythrocyte count was 2,300,000, and polychromatophils and spherocytes were present. The urine was plus four for bilirubin, and urobilinogen was present in a dilution of 1:1,025. Total serum bilirubin was 37.04 mg. with 18.52 direct reacting. Cephalin-cholesterol flocculation was plus four; thymol turbidity, 11 units; alkaline phosphatase, 9.6 Bodansky units; and prothrombin time, 95 percent. The heterophil antibody titer was positive in a dilution of 1:7,168. Cardiolipin flocculation was positive in a titer of 1:4. Direct and indirect Coombs' tests were positive, and trypsinized erythrocyte cell preparation was negative. Bone marrow examination revealed marked erythroid hyperplasia (E-M ratio, 3:1); reticulocytes were 15 percent.

The patient had elevations in temperature to 105° F., poor appetite, and occasional vomiting. Infusions of dextrose in saline were necessary to combat dehydration, and benadryl and ephedrine were administered because of his urticaria. On the tenth hospital day hemoglobin was 7.5 grams, and a transfusion of 500 cc. of blood was given. On the twenty-first hospital day total serum bilirubin was 2.28 mg. with 0.80 direct reacting; hemoglobin, 12 grams; hematocrit, 35 units; heterophil antibody titer was 1:1,792; direct and indirect Coombs' tests were positive; cardiolipin flocculation was negative. At the end of six weeks the patient was discharged with a negative heterophil antibody titer and Coombs' test, hemoglobin level being 13.5 grams with 4,000,000 erythrocytes. Liver function studies were normal at this time.

Case 2. A 33-year-old pilot was admitted with a history of dark urine for three days, jaundice of one-day duration, and fever, chills, and sore throat of two-day duration.

Physical examination revealed a thin, ill-appearing man with mild jaundice. His temperature was 100.2° F.; blood pressure, 100/70; and pulse, 98. His pharynx was dusky, and lymphoid tissue over the posterior pharyngeal wall was hyperplastic. Axillary, inguinal, and anterior and posterior cervical nodes were enlarged and tender. The liver was palpable one finger-breadth below the costal margin and was tender.

Laboratory findings on admission were a leukocyte count of 15,000 with 40 percent neutrophils and 60 percent lymphocytes, most of which showed variability and were of the atypical form; hemoglobin, 14.5 grams; erythrocyte count, 4,200,000; total serum bilirubin, 4.22 mg. with 1.86 direct reacting. The initial heterophil (unabsorbed) titer was 1:7, and two days later, 1:14;

serologic findings were negative; cephalin-cholesterol flocculation, plus four; and thymol turbidity, 6 units.

Penicillin (300,000 units b. i. d.), warm saline irrigations to throat, and aspirin were started, and after several days the patient felt considerably better. During the second week of hospitalization the jaundice was progressively more intense, and a repeat serum bilirubin showed a total of 10.74 mg. with 4.50 direct reacting. Leukocyte count was 18,000 with 60 percent polymorphonucleocytes and 40 percent lymphocytes, most of which again were of the atypical variety; hemoglobin, 11 grams; erythrocyte count, 3,000,000. Spherocytes were noted in the peripheral smear, and the reticulocyte count was 12 percent. Direct and indirect Coombs' tests and trypsinized erythrocyte study were negative. Three days later hemoglobin was found to be 8 grams with 2,200,000 erythrocytes. Repeat serologic studies were negative. Bone marrow examination revealed erythroid hyperplasia (E-M ratio, 1:1). A four-day fecal urobilinogen determination averaged 210 mg. per day. The hemolytic index daily fecal urobilinogen (average of four days) was 46 mg. The heterophil antibody titer at the tenth day of illness was 1:224, and thereafter was present in titers below 1:112.

After three weeks of illness, the patient's hemoglobin and erythrocyte count began to rise, and at the end of the seventh week hemoglobin was 12.5 grams with 3,800,000 erythrocytes. Transfusion was not given. The patient was discharged after ten weeks of hospitalization.

Case 3. A 19-year-old Negro airman, third class, was well until five days prior to admission when he developed frontal headache, weakness, anorexia, fever, and chills. Urine had been noted to be darker than normal for two days prior to admission, but stools were of normal color.

On admission he was in no particular distress and did not appear ill. Temperature was 99° F.; blood pressure, 110/80; and pulse, 90. The significant findings were slight scleral icterus, mild pharyngeal injection, minimal cervical and axillary adenopathy, and tenderness in the left upper abdominal quadrant. The spleen was palpable, and the liver was not enlarged.

Initial laboratory studies disclosed a leukocyte count of 14,000 with 30 percent polymorphonucleocytes and 70 percent atypical lymphocytes; hemoglobin, 14 grams; 3,900,000 erythrocyte count; total serum bilirubin, 5.40 mg. with 2.38 mg. direct reacting; cephalin-cholesterol flocculation, plus four; thymol turbidity, 11 units; heterophil antibody titer, 1:896. Sickle cell preparation was negative.

On the fifth hospital day scleral icterus was intense and total serum bilirubin was 17.94 mg. with 6.23 mg. direct reacting. Hemoglobin had fallen to 10 grams, and erythrocyte count was 2,600,000. Bone marrow examination revealed erythroid hyperplasia (E-M ratio, 2:1), and the reticulocyte count was 14 percent. The direct and indirect Coombs' tests were negative, and the trypsinized erythrocyte preparation was positive. Spherocytes were seen in the peripheral smear. On the seventh hospital day hemoglobin had fallen to 8.5 grams and the erythrocyte count was 2,000,000 and remained stabilized at this level for several additional days. By the twenty-first hospital day the hemoglobin level had risen to 11 grams and the erythrocyte count to 2,800,000 without transfusions being given. The patient was discharged on the thirty-first hospital day with a hemoglobin level of 13 grams and an erythrocyte count of 3,500,000. At this time all serologic tests were negative.

Discussion

The variability so characteristic of infectious mononucleosis and its laboratory findings also exists with regard to complicating hemolytic anemia, especially in the instance of serologic findings. Case 1 showed positive direct and indirect Coombs' tests and a negative trypsinized erythrocyte test; case 2 showed negative direct and indirect Coombs' tests and negative trypsinized erythrocyte test, but a significantly elevated hemolytic index (46 mg.); case 3 showed negative direct and indirect Coombs' tests, but a positive trypsinized erythrocyte test. The classical findings of acquired hemolytic jaundice, *i. e.*, spherocytosis, reticulocytosis, erythroid hyperplasia, and jaundice, were common to all.

The jaundice encountered was more intense than seen in the usual patient with primary acquired hemolytic jaundice or uncomplicated infectious mononucleosis. It was probably resultant from the concomitant liver involvement seen in almost all cases in my experience. However, jaundice was seldom encountered in the uncomplicated cases, and, when it was present, did not exceed 10 mg. of total bilirubin. Symptomatic hemolytic anemia should be considered with progressively increasing jaundice.

The mechanism of antibody production (autoagglutinins and hemolysins) and autosensitization of the erythrocyte is vaguely stated to be under the influence of infection.[2] Antibodies become attached to the erythrocyte with resultant spherocyte formation and shortened survival time.

Treatment should be expectant for the most part, except where the degree of hemolysis or its continued progression warrant blood transfusions and possible cortisone therapy. Splenectomy with prompt recovery[8] has been reported in one instance.

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Problems in Civil Defense

A very long-range task in civil defense is to plan for the probable necessity of family and personal rehabilitation on a scale which may be gigantic. If a civilian population can in fact withstand modern attack, and finally defeat it, it will do so because enough of its members whose social functions have been disrupted can be brought rapidly back into effective roles. This is a large prescription. It goes far beyond the matters of protection and physical rehabilitation of communities which are regarded as technically within the province of civil defense. It involves details of economic policy, social work, community planning, psychiatry, and public information which are hard to foresee accurately. It will require a large number of professionally skilled people to carry it out; and their skills will often be different from those demanded in the "protection" phase of defense. But this undertaking may be the most important of all.

—DWIGHT W. CHAPMAN
in *Bulletin of the Atomic Scientists*

SPLINT FOR FRACTURE OF GREAT TOE

CONRAD L. ARNOLD, *Ensign, USNR*
WAYNE S. MONTGOMERY, *Lieutenant, MC, USNR*

FRACTURES of the great toe are usually caused by a blow from a heavy object, resulting in comminution of one or both phalanges and considerable tissue damage. During the period of hematoma formation and edema, the toe is exquisitely painful, so that alleviation of the accompanying disability may become the major concern of treatment.

Boot walking casts with toe pieces and reworked shoes with the toe pieces removed and extra soles applied both have their disadvantages. Often it is desirable to apply hot soaks after the first 24 hours, or it may be necessary to dress associated wounds. The Japanese wooden-stilted "geta" has therefore been modified by Boatswain B.A. Steele, USN, and the senior author to immobilize fractures of the great toe while overcoming these drawbacks and permitting the patient to return to duty.

Figure 1 illustrates the construction and use of this sandal-type splint. Proper position and height of the stilts is essential. The basic steps are as follows:

1. The outline of the foot is traced on a sheet of paper and 1/4 inch is added on all sides.

2. From the enlarged tracing, a splint is cut from a piece of 1/2-inch plywood.

3. Each of the two stilts is 1 inch wide, and is cut to a length 1/2 inch less than the width of the splint at the point where it is to be attached, so that the ends are set back 1/4 inch from the medial and lateral splint borders.

4. The posterior stilt is 1 inch high and is placed in the center of the heel.

5. The anterior stilt is 1 3/8 inches high and is placed midway between the anterior margin of the heel and posterior margin of the worn surface of the sole.

From Surgical Team 16, Navy No. 3923, FPO, San Francisco, Calif.

6. A three-legged metal guard may be placed over the injured toe if desired.

7. The slipper is secured with a 2-inch elastic bandage, as illustrated.

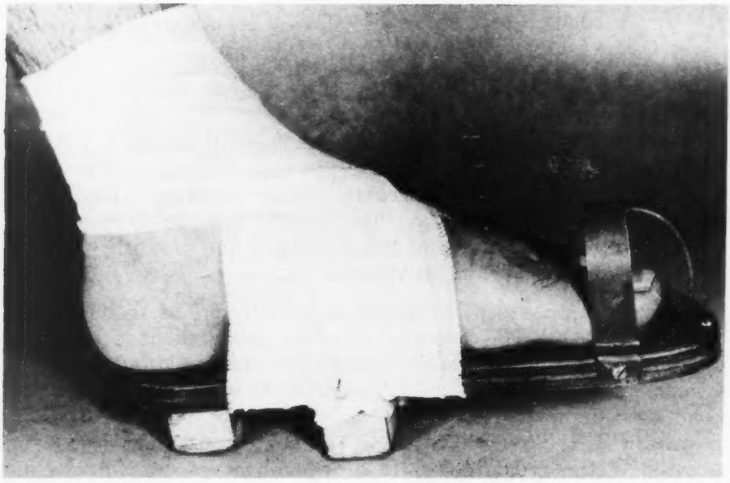

Figure 1.

As an example of the successful use of this splint, a boatswain who had sustained a crushing injury of the great toe with comminution of both phalanges was enabled to continue his supervision of the loading and unloading of ammunition at sea without missing a day of duty. He traversed the ship's ladders and got about the deck with relative ease and freedom from pain.

Hypertensive cardiovascular disease remains one of the foremost problems facing medicine today. It has been estimated that one-fourth of the adult population of this country has high blood pressure and that the complications of this condition account for more deaths annually than does cancer. Hypertension is of particular importance because it is responsible for many deaths and much premature disability in young and middle-aged persons. It is highly desirable, therefore, to lower the mortality for such a disease.

—REGINALD H. SMITHWICK, M. D., and
JESSE E. THOMPSON, M. D.
in the *Journal of the American Medical Association*

WALKING APPLIANCES FOR FRACTURES ABOUT THE ANKLE

REECE R. BOONE, Jr., *Captain, USAF (MC)*

MANY devices have been used to permit weight bearing when the lower extremity is encased in a plaster-of-paris cast because of fractures at or about the ankle. I have been interested in the use of these devices which, with the exception of the standard calipers, are seldom referred to in standard texts or in current literature.[1,2]

The principle involved in the use of walking devices is well known. In fractures around the ankle, the extremity is encased in a plaster cast, with the foot at 90° to the leg, which extends from the fold of the toes to just below the knee. If the cast is snugly fitted, weight can be borne on the extremity without disturbing the ankle. The weight is bypassed to the upper third of the leg because of the tapering of the leg from the knee downward. Any appliance attached to the cast parallel to the tibia and alined with the direction of weight bearing is useful if it produces enough elevation to prevent the toes from being injured during locomotion.

The standard issue caliper or walking heel (Stock No. 3-731-000, Armed Services Catalog of Medical Materiel) is made of lightweight metal and has a rubber block attached to the crossbar by three small brads (fig. 1). In my hands this device has proved to be unsatisfactory. When walking in absence of the ability to flex or extend the ankle, the body is twisted as the uninjured limb is thrown forward. After the patient had used this device for a few days, in almost every instance the small brads were twisted off, releasing the rubber block. To overcome this defect I devised the appliance shown in figure 2 which has proved satisfactory. The rubber bar was removed from the regular caliper and replaced with a metal plug with a heavy bolt welded to the crossbar. The plug is tooled to house a small set of ball

From U. S. Air Force Hospital, Otis Air Force Base, Mass. Capt. Boone is now at Montgomery, W. Va.

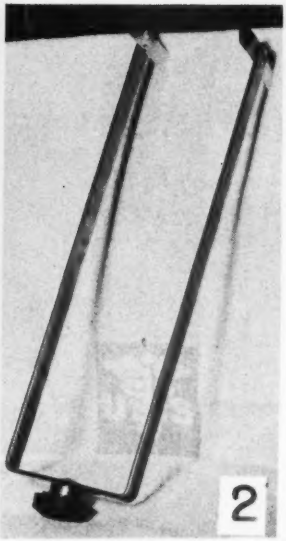

Figure 1. Standard issue walking heel. Figure 2. Modification of standard issue walking heel.

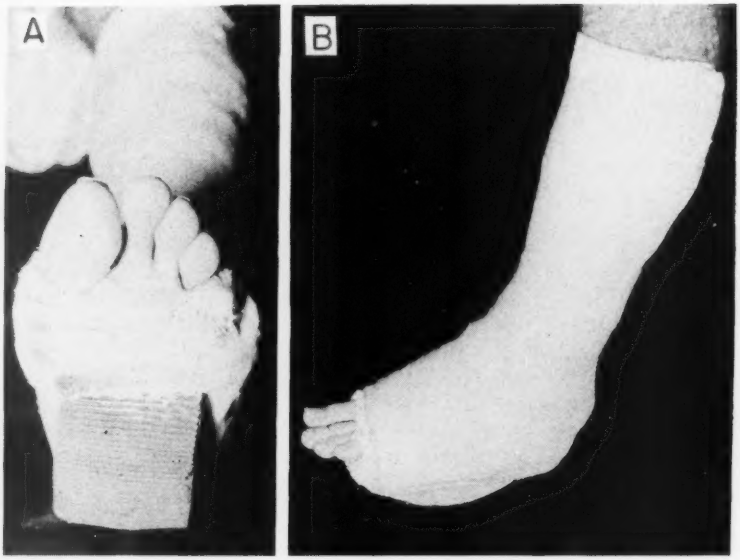

Figure 3. Author's rocker-type walker attached to ankle cast.

bearings and is covered with a heavy rubber cap to provide traction. The plug rotates readily on the bearings and permits considerably easier propulsion.

In an earlier device[3] the rocking motion from heel to toe closely simulated the normal gait and produced no more elevation than could be compensated for by use of a shoe on the uninjured foot with slight tilting of the pelvis. This apparatus was bulky and presented difficulties for the patient in donning and removing his trousers. The principle involved, however, was sound and led to the recent construction of the small, simple rocker shown in figure 3. This rocker consisted of a block of hard pine curved on the inferior surface and attached with screws to a thin, flat sheet of metal that projected five eighths of an inch on all sides. This flang permitted easy attachment to the bottom of the cast. A strip of corrugated rubber was glued to the curved surface of the block to permit adequate traction. This apparatus has been used satisfactorily on three patients.

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Great Discoveries

We seem to forget: that in the past great discoveries have with few exceptions been made by individual workers, often working in great isolation; that some of the most important discoveries have been made without any plan of research—largely by accident or in dreams, as in the instance of Loewi's Nobel prize-winning discovery; that discoveries have resulted from a general state of what has been called puzzlement—puzzlement at discrepancies in findings—a state of mind which would not lend itself to any accurate verbal description; that there are researchers who do not work on a verbal plane, who cannot put into words what they are doing—whose thinking functions in terms of experiences, subconscious observations—who don't know what they have been after until they actually arrive at their discoveries.

—CURT P. RICHTER
in *Science*

Regular Medical Corps Officers Certified by Specialty Boards

The American Board of Obstetrics and Gynecology

This board was founded in 1930, and on 30 June 1953 had issued a total of 3,908 certificates to physicians qualified in these specialities. Of this number, 47 are regular Medical Corps officers of the three military departments, according to current records in the Offices of the respective Surgeons General. They are:

Elwin N. Akers, *Lt. Col., USA*
Saul L. Avner, *Lt. Col., USA*

William S. Baker, *Comdr., USN*
Ervine S. Bills, *Comdr., USN*
Harvey C. Boyd, *Lt. Col., USA*
Charles I. Bryans, *Maj., USA*

George C. Calderwood, *Comdr., USN*
Dwight A. Callagan, *Lt. Comdr., USN*
Roy E. Crowder, *Comdr., USN*

Lewis T. Dorgan, *Capt., USN*

Marcus A. Godinez, *Comdr., USN*
Harold B. Graves, *Lt. Col., USA*

Walter N. Hanson, *Comdr., USN*
Louis M. Harris, *Capt., USN*
Harold E. Harrison, *Col., USA*
Richard A. Hayden, *Maj., USA*
Harold H. Hill, *Comdr., USN*
Harold Hirshland, *Capt., USN*
Frederick C. Hopp, *Lt. Col., USA*
Edward B. Hopper, *Comdr., USN*
Henry J. Hunter, *Comdr., USN*
Joseph W. Huston, *Comdr., USN*

Benjamin H. Inloes, Jr., *Lt. Col., USAF*

Harold M. Jesurun, *Lt. Col., USA*

Edward T. Knowles, *Capt., USN*
George J. Kohut, *Comdr., USN*

James H. Lee, *Lt., USN*
Bronko P. Lelich, *Lt. Col., USAF*
Jerome P. Long, Jr., *Capt., USN*

John A. Pease, *Lt. Comdr., USN*
Armand J. Pereyra, *Capt., USN*
Paul Peterson, *Capt., USN*

Humbert L. Riva, *Lt. Col., USA*
Laurence G. Roth, *Lt., USN*
Daniel H. Rowe, *Maj., USAF*
Morris M. Rubin, *Capt., USN*

John W. Simpson, *Col., USA*
William A. Simunich, *Comdr., USN*
Fred B. Smith, *Capt., USN*
James H. Smith, *Lt. Col., USA*
Robert C. G. Stanley, *Maj., USA*

Roy W. Tandy, *Comdr., USN*

Albert T. Walker, *Capt., USN*
Charles E. Weber, *Lt. Comdr., USN*
Elwood L. Woolsey, *Comdr., USN*

John S. Zelenik, *Lt. Col., USA*
Edward A. Zimmermann, *Col., USA*

This is the third of a series. The names of officers certified by the American Boards of Dermatology and Syphilology, and Pediatrics will be published in the January issue.

Publications by Officers of the Medical Services of the Armed Forces

Adair, C. V., Capt., MC, USA; Gauld, R. L.; and Smadel, J. E.: Aseptic meningitis, a disease of diverse etiology; clinical and etiologic studies on 854 cases. *Ann. Int. Med.* 39: 675-704, Oct. 1953.

Allen, G. W., Capt., USAF (MC): Black widow spider (Latrodectus mactans) poisoning treated with d-tubocurarine chloride. *Ann. Int. Med.* 39: 624-625, Sept. 1953.

Baker, W. S., Jr., Comdr., MC, USN; Baker, J. P., Lt., MC, USNR; Lussy, W. J., Lt., MC, USNR; Bancroft, C. E., Lt., MC, USN; Claiborne, H. A., Lt., MC, USNR; and Lehman, J. J., Lt., MSC, USNR: Acute intravascular hemolysis, lower nephron nephrosis, and acute anterior pituitary necrosis complicating case of severe pre-eclampsia. *Am. J. Obst. & Gynec.* 66: 842-852, Oct. 1953.

Burch, R. J., Lt. Col., USAF (DC): Spontaneous closure of parotid gland fistula with aid of banthine. *Oral Surg.* 6: 1191-1194, Oct. 1953.

Chappel, A. T., Capt., MC, USA, and Watson, R. B., Lt. Col., MC, USA: Intermittent left bundle branch block. *J. Indiana M. A.* 46: 865-869, Sept. 1953.

Chipps, J. E., Lt. Col., DC, USA, and Zucker, E., Capt., MC, USA: Fibrous dysplasia of mandible probably with concomitant ethmoid lesion. *Oral Surg.* 6: 1209-1215, Oct. 1953.

Crosby, W. H., Lt. Col., MC, USA: Role de la rate dans la spherocytose hereditaire. *Sang* 24: 477, 1953.

Doolan, P. D., Lt., MC, USN; Hess, W. C.; and Kyle, L. H.: Acute renal insufficiency due to bichloride of mercury; observations on gastrointestinal hemorrhage and BAL therapy. *New England J. Med.* 249: 273-276, Aug. 13, 1953.

Forsee, J. H., Col., MC, USA; Tempel, C. W., Col., MC, USA; and Scott, E. L., Maj., MC, USA: Results following pulmonary resection of tuberculous disease with special reference to localized necrotic lesions. *Ann. Int. Med.* 39: 463-470, Sept. 1953.

Frerichs, D. W., Capt., MC, USA, and Spooner, S. W., Capt., DC, AUS: Median palatine cyst. *Oral Surg.* 6: 1181-1185, Oct. 1953.

Jahnke, E. J., Jr., Maj., USAF (MC); Palmer, E. D., Lt. Col., MC, USA; Sborov, V. M.; Hughes, C. W., Lt. Col., MC, USA; and Seeley, S. F., Brig. Gen., MC, USA: Evaluation of shunt operation for portal decompression. *Surg., Gynec. & Obst.* 97: 471-482, Oct. 1953.

Jones, P. N., Capt., USAF (MC), and Bigham, R. S., Jr., Capt., USAF (MC): Spontaneous hemopneumothorax—with reference to the use of streptokinase and streptodornase. *Ann. Int. Med.* 39: 907-914, Oct. 1953.

Kern, R. A., and Wimberley, N. A., Jr., Maj., MC, USA: Penicillin reactions; their nature, growing importance, recognition, management and prevention. *Am. J. M. Sc.* 226: 357-375, Oct. 1953.

Kintz, F. P., Col., MC, USA, and Thompson, R. G., Lt. Col., MC, USA: Disaster planning activities in Panama. *Mil. Surgeon* 113: 282-284, Oct. 1953.

Margolin, E. G., First Lt., MC, USA: Xanthoma diabeticorum. *Ann. Int. Med.* 39: 629-635, Sept. 1953.

Marx, F. J., Lt., MC, USNR, and Love, J., Capt., MC, USN: Effectiveness of N-allylnormorphine in management of acute morphine poisoning. *Ann. Int. Med.* 39: 635-640, Sept. 1953.

Ober, W. B., Palmer, R. E.; and Glassy, F. J., Capt., MC, USA: Rhabdomyosarcoma of vulva and vagina. *A. M. A. Arch. Path.* 56: 364-373, Oct. 1953.

Reid, H. S., Lt. Col., MC, USAR: Standard order of procedure of evacuation hospital (semi-mobile). *Mil. Surgeon* 113: 285-290, Oct. 1953.

Richardson, F. H., Jr., Col., USAF (DC), and Cohen, B. M., Capt., USAF (DC): Fractures of the mandibular condyle. *Oral Surg.* 6: 1149-1164, Oct. 1953.

Riva, H. L., Lt. Col., MC, USA; Andreson, P. S., Lt. Col., MC, USA; and O'Grady, J. W., Capt., MC, USA: Pregnancy and Hodgkin's disease; report of eight cases. *Am. J. Obst. & Gynec.* 66: 866-870, Oct. 1953.

Sifre, R. A., Lt., MC, USA; Stenberg, E. S., Maj., MC, USA; and Graybill, L. D., Capt., MC, USA: Roentgen configuration of duodenojejunal area in carcinoma of pancreas. *Geriatrics* 8: 486-493, Sept. 1953.

Somers, K., Lt. Col., MC, USA, and Farinacci, C. J., Col., MC, USA: Granular cell myoblastoma of vocal cord. *Laryngoscope* 63: 422-429, May 1953.

Storey, C. F., Capt., MC, USN; Knudtson, K. P., Comdr., MC, USN; and Lawrence, B. J.: Bronchiolar ("alveolar cell") carcinoma of lung. *J. Thoracic Surg.* 26: 331-406, Oct. 1953.

Thornton, L. F., Capt., MC, USA: Fatal case of pulmonary infarction due to embolism of amniotic fluid. *Am. J. Obst. & Gynec.* 66: 871-877, Oct. 1953.

Tucker, G. W., Lt. (jg), MC, USNR, and Baker, W. S., Jr., Comdr., MC, USN: Low cervical cesarean section of term pregnancy in uterus unicornis unicollis associated with renal agenesis and malformation of bony pelvis. *Am. J. Obst. & Gynec.* 66: 895-896, Oct. 1953.

Walker, W. J., Lt. Col., MC, USA: Relationship of adiposity to serum cholesterol and lipoprotein levels and their modification by dietary means. *Ann. Int. Med.* 39: 705-716, Oct. 1953.

The doctor who takes a poor history, does not look at the patient, and accepts unthinkingly the diagnosis that is handed him by the laboratory assistant or the roentgenologist is daily making terrible blunders. Many of the things he diagnoses are silent and symptomless and have nothing to do with the patient's illness. The saddest feature of all this is that this "push-button" type of decerebrate medicine is being practiced, not so much, perhaps, in the villages, as in the university centers.

—WALTER C. ALVAREZ, M. D.
in the *New England Journal of Medicine*

Deaths

BROWN, Clarence Raymond, Lieutenant Colonel, MC, USA, Percy Jones Army Hospital, Battle Creek, Mich.; graduated from University of Tennessee College of Medicine in 1937; commissioned a first lieutenant in 1941; served in Europe in World War II; died 5 July 1953, age 41, of coronary occlusion.

CAMPBELL, James McLain, Lieutenant Colonel, MC, USAR, Camp Chaffee, Ark.; graduated from University of Tennessee College of Medicine in 1933; commissioned a lieutenant colonel on 1 July 1953; died 5 August 1953, age 43, of coronary thrombosis, while enroute to Camp Chaffee from Fort Sam Houston, Tex.

COCKS, Charles Edward, Jr., Colonel, MC, USA, Letterman Army Hospital, San Francisco, Calif.; graduated from University of California Medical School in 1933; commissioned a first lieutenant, 13 May 1933; served in the Philippine Islands and the Far East Command; died 29 September 1953, age 45, of coronary occlusion.

COLER, Eugene Seeley, Colonel, USAFR (MC), U. S. Air Force Hospital, South Ruislip, England; graduated from McGill University Faculty of Medicine in 1922; ordered to active duty, 14 May 1951; certified by American Board of Obstetrics and Gynecology; Fellow of American College of Surgeons; associate clinical professor of obstetrics and gynecology, Columbia University College of Physicians and Surgeons; died 30 August 1953, age 59, of myocardial infarction at Denham, Buckinghamshire, England.

COLLINS, Leonard James, Jr., Lieutenant, MC, USNR, U. S. Naval Hospital, Jacksonville, Fla.; graduated from Southwestern Medical School of the University of Texas in 1947; ordered to active duty in May 1952; died 6 June 1953, age 29, of pulmonary edema and cardiac arrest.

KEANE, James Patrick, First Lieutenant, USAFR (MC), Lockbourne Air Force Base, Ohio; graduated from St. Louis University School of Medicine in 1948; ordered to active duty on 28 March 1953; died 30 July 1953, age 30, in an aircraft accident near Olmstead, Ohio.

KILEY, Helen Mary, Captain, USAF (NC), U. S. Air Force Hospital, Wiesbaden, Germany; commissioned first lieutenant, 15 November 1946; died 14 September 1953, age 39, of adenocarcinoma of kidney with multiple metastases at Walter Reed Army Hospital, Washington, D. C.

LUTES, Lester L., Major, MC, USAF, U. S. Air Force Hospital, South Ruislip, England; graduated from University of Tennessee College of Medicine in 1941; commissioned a first lieutenant on 15 October 1941; died 14 April 1953, age 46, in an automobile accident near Cheltenham, England.

McCASLIN, Hugh Towles, First Lieutenant, USAFR (MC), U. S. Air Force School of Aviation Medicine, Randolph Air Force Base, Tex.; graduated from Columbia University College of Physicians and Surgeons in 1952; ordered to active duty, 12 February 1953; died 1 September 1953, age 25, at Brooke Army Hospital, Tex., of injuries received in an automobile accident.

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NORRIS, James Esten, Lieutenant, MC, USNR, Naval Station, Treasure Island, San Francisco, Calif.; graduated from University of Chicago School of Medicine in 1949; commissioned a lieutenant in 1949; served in the Korean Campaign; certified by National Board of Medical Examiners; died 12 June 1953, age 27, at U. S. Naval Hospital, Oakland, Calif.

RHAMY, Richard Alan, First Lieutenant, MC, USAFR, U. S. Air Force School of Aviation Medicine, Randolph Air Force Base, Tex.; graduated from Indiana University School of Medicine in 1951; entered active service on 19 April 1953; died 1 July 1953, age 24, of traumatic bilateral pneumothorax with aero-embolism.

SATINE, Bernard Alvin, Major, USAFR (DC), Orlando Air Force Base, Fla.; graduated from Temple University School of Dentistry in 1942; ordered to active duty on 6 July 1948; died 27 August 1953, age 36, from drowning as the result of an automobile accident near Canal Point, Fla.

ZEMBA, George William, Lieutenant, DC, USNR, Lockbourne Air Force Base, Ohio; graduated from Western Reserve University School of Dentistry in 1944; ordered to active duty in November 1952; died 30 July 1953, age 35, in an aircraft accident near Olmstead, Ohio.

"Poliophobia"

During epidemics, dread of poliomyelitis is so great that any type of complaint may be interpreted as a dangerous evidence of disease. Prodromal symptomatology is involuntarily imitated, hysterical paralyses may appear, and hyperventilation, or feelings of suffocation, may suggest respiratory involvement. Complete aphonia and a sluggish gag reflex may be encountered. Persons may complain of a lump in the throat and may fear that bulbar involvement is developing. When these persons are examined, ingenuity may reveal that an apparently paralyzed muscle actually functions in one type of movement though not in another. Deep tendon reflexes are normally brisk, and frequently areas of hyperesthesia or paresthesia having bizarre distribution are described. None of the abnormal findings persist during sleep, temperature is not significantly elevated, bladder and bowel function are normal, and paralytic findings often are altered by suggestion. Demonstration for the patient's benefit of normal spinal fluid has not been particularly helpful in my experience. An understanding attitude and repeated physical examination to confirm the absence of real disease, together with prescription of rest, are usually adequate to allay anxiety and this eradicates signs of illness.

—CLIFFORD G. GRULEE, JR., M. D.
in the *Journal of the American Medical Association*

BOOK REVIEWS

Surgery of Trauma, edited by *Warner F. Bowers*, Colonel, MC, USA. 605 pages; 284 illustrations. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $15.

The purpose of this book is to present wound healing in correlation with biophysical, chemical, bacteriologic, and mechanical factors. This general picture is supplemented with specific attention to the special systems and organs and their reaction to injury. The problem of regional wound surgery is considered by various specialists, and the military and research facets of the problem are discussed in subsequent sections.

This publication is a compilation of the experience and knowledge of 42 contributors. Many levels of experience and a multiplicity of specialties are represented with varying degrees of excellence. There is some overlapping of content between the various essayists and minor repetition in the copious documentation of the literature that follows each chapter. This volume must be read with discrimination because every contribution is not equally authoritative. For this reason, it is probably not desirable for use by medical students. Physicians in the military service and in civilian practice, who may be faced with the problem of treatment of trauma, will enjoy this collection and correlation of various aspects of trauma and its therapy.

The occasional editor's note or contribution brings some order to unorthodoxy. For example, the problem of tourniquets is editorially settled after debatable dogma has been presented. The section on evacuation and distribution of casualties might well be the only service paid to this problem instead of having spotty pronouncements made on this matter throughout the text by other contributors.

The section on ballistics is fascinating and, although far from clinical, gives interesting background on the production of trauma. Other high points not previously mentioned are the physics and physiology of the specific effects of craniocerebral wounds, the discussion of battle and nonbattle trauma to hands and the therapy required, the dogmatic but effective section on genitourinary trauma, and the section on maxillofacial trauma with its excellent pictures and schematic drawings based on pictures of actual cases presented.

This volume presents well-qualified authorities who have assembled and presented orthodox and sound discussions of problems relating to wound healing, trauma, its results, and the therapy of the various disturbances that occur in its wake.

—Col. D. S. Wenger, USAF (MC)

Diseases of Muscle, A Study in Pathology, by *Raymond D. Adams*, M. A., M. D., Associate Clinical Professor of Neurology, Harvard Medical School; Chief of Neurological Service, Massachusetts General Hospital; Formerly Visiting Neurologist and Neuropathologist, Neurological Unit, Boston City Hospital; *D. Denny-Brown*, M. D., D. Phil., F. R, C. P., James Jackson Putnam Professor of Neurology, Harvard Medical School; Director, Neurological Unit, and Neurologist-in-Chief, Boston City Hospital; and *Carl M. Pearson*, M. D., Former Resident in Pathology, Mallory Institute of Pathology, Boston City Hospital. 556 pages; 347 illustrations. Paul B. Hoeber, Inc., New York, N. Y., publishers, 1953. Price $16.

This is the first book in the English language with a comprehensive account of the various muscular disorders. It is divided into three major parts. The first deals with embryology, normal histology, and the innervation and vascular supply of skeletal muscle. It includes a discussion of the chemical basis of muscular structure and function and a short but detailed account of the relationship between muscular contraction and neuronal activity. The second part deals with the pathologic reactions of skeletal muscle, with 90 pages devoted to experimental pathology in denervation atrophy, disuse atrophy, reaction to injury, circulatory disorders, experimental infections, and deficiencies. The concluding chapter of this section is devoted to the general reactions of muscle to disease. The third part considers the pathology of muscle diseases: congenital defects, the dystrophies, inflammatory conditions, tumors, traumatic and circulatory diseases, spinal and neural muscular atrophies, and miscellaneous diseases. The concluding chapter of the book concerns differential diagnosis and suggests methods of obtaining and preparing muscle tissue for pathologic study.

The text is profusely illustrated with excellent photomicrographs and electromyograms. Each chapter is concluded by an extensive bibliography of both English and foreign literature. This work is more than a study of pathology; it is rather a study of clinical-pathologic correlation with a survey of anatomy and physiology for the background. The writers are to be complimented for their perspicacity in compiling such diversified facts concerning diseases of muscle. It is a book which will be of value, not only to the resident and practicing pathologist, but to the experimental pathologist, the internist, the neurologist, and the surgeon.—*Lt. C. E. Boonstra, MC, USN*

Textbook of Pharmacology for Nurses, by *Margene O. Faddis,* R. N., M. A., Professor of Medical Nursing, Frances Payne Bolton School of Nursing, Western Reserve University, Cleveland, Ohio; assisted by *Joseph N. Hayman,* Jr., B. A., M. D., Dean, Tufts College Medical School; formerly Professor of Medicine, School of Medicine, Western Reserve University. 4th edition. 520 pages; 106 illustrations. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $4.50.

The fourth edition of this textbook has been thoroughly reorganized and revised to include the latest developments in drug therapy. It follows the same format as the previous edition, but some of the material has been rearranged and new information added. The book is profusely illustrated and contains 31 chapters, each followed by a bibliography.

That the authors had the student nurse in mind at all times is evidenced by the clear and concise wording as well as by the numerous diagrams and examples of mathematical equations to clarify the meaning of formulas and rules. They have achieved their objective of emphasizing the application of knowledge rather than the mere accumulation of facts, with the purpose of making an informed and responsible nurse out of an interested student. All nurses will find this text very interesting reading and an excellent source for reference.—*Lt. Comdr. A. Danyo, NC, USN*

Practical Pedodontia or Juvenile Operative Dentistry and Public Health Dentistry, An Introductory Text for Students and Practitioners of Dentistry, by *Floyde Eddy Hogeboom,* D. D. S., F. A. C. D., Professor of Children's Dentistry, College of Dentistry, University of Southern California, 1921-1949; Former Member Health and Development Department, Pasadena City Schools; Former Member of Children's Hospital Staff, Los Angeles; Chairman, Dental Assistant's Course, Los Angeles Junior College, Los Angeles, 1930-37. Special Chapters by *Forrest Anderson,* M. D., Sc. D. (Med.), former Director, Child Guidance Clinic of Los Angeles and Pasadena; special lecturer in Mental Hygiene, University of California; *Harold Hawkins,* D. D. S., Chico, Calif., former Associate Professor of Bacteriology and Preventive Dentistry, College of Dentistry, University of Southern California; *Thaddeus P. Hyatt,* D. D. S., F. A. C. D., former Professor of Preventive Dentistry, New York University, College of Dentistry; former Director, Dental Department, Metropolitan Life Insurance Co.; and *Harry E. Straub,* D. D. S., special Instructor in Exodontia and Minor Surgery; former Faculty Member, College of Dentistry, University of Southern California. 6th edition. 642 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., publisher, 1953. Price $12.50.

The authors of this book attempt to encompass so much in the field of dentistry that many of its sections are generalized and cursory. The introductory chapters are devoted to a résumé of the economics and the business aspects of the practice of dentistry with a brief presentation of the psychology of child management. The succeeding chapters deal with the embryologic growth of the face particularly in its relationship to the development of the oral structures. A large portion of the remainder of

the book is given to an interesting, well-arranged discussion on the deciduous teeth, the methods and materials used in the control and treatment of caries, and an excellent chapter on the prevention and inhibition of caries in the adolescent. In addition to a detailed practical discussion of the fluorides, there is an excellent chapter on the role of nutrition and the biochemical aspects of caries. The chapter on anesthesia is inadequately presented because it is limited to a generalized discussion of but a few of the many anesthetic agents applicable to children. The concluding chapters on preventive orthodontia, endocrinology, and public health are interesting and well written.

Because of its broad coverage, this book is not a complete book on pedodontics. It should be of value for the student or as a ready reference for the young practitioner.

—Lt. Col. A. M. Mohnac, USAF (DC)

Emotional Factors in Skin Disease, A Psychosomatic Medicine Monograph, by *Eric Wittkower,* M. D., and *Brian Russell,* M. D., with contributions from *Peter Edgell, Desmond Irwin,* and *John Slorach;* forewords by Dr. *R. M. B. MacKenna* and Professor *D. E. Cameron.* 214 pages. Paul B. Hoeber, Inc., New York, N. Y., publisher, 1953. Price $4.

This monograph is the joint effort of four psychiatrists to one dermatologist, and the opinions expressed reflect that ratio of collaboration. The volume is divided into two parts, each with three sections or chapters. The conditions discussed, not well documented, include pruritus vulvae, pruritus ani, eczema, pompholyx, psoriasis, seborrheic dermatitis, urticaria, acne vulgaris, rosacea, and alopecia. The authors use charts to a questionable advantage, because they do not always confirm the conclusions offered. The section on alopecia is labored and overwritten, and the account devoted to urticaria is unconvincing. Little attention is paid to control studies.

It has been difficult for this reviewer to be entirely objective in appraising and reporting on this work, because he has been influenced by a similar lack of objectivity on the part of the authors in their arbitrary and easy manner in making their points. The book is interesting, however, provocative, and, with the exception already noted, well-written. A series of prefaces, including one by MacKenna, are especially recommended. The book has been directed to the practicing physician and the dermatologist, but it is actually in the psychiatrist's domain.

—Capt. R. L. Gilman, MC, USN

From the Workshop of Discoveries, by Otto *Loewi,* Research Professor of Pharmacology, New York University College of Medicine. Porter Lectures, Series 19. 62 pages. University of Kansas Press, Lawrence, Kans., publishers, 1953. Price $2.

The first of three lectures by Dr. Loewi at the University of Kansas, entitled "Reflections on the Study of Medicine," is a broad, philosophical essay for medical students. He cautions against the dogmatism created by textbooks and advises students to "feel like architects having before their mental eye the building to be erected and making the selection of the material accordingly." In the second lecture, which gives the book its title, the author draws on his rich experience in research to distinguish several modes of discovery including those made by chance, intention, and intuition or imagination. He recognizes all three as important but argues that observations are not discoveries unless the observer recognizes their importance. His own discovery of the chemical transmission of nerve impulses, for which he was awarded a Nobel prize, is attributed to intuition. The last lecture entitled, "Problems in the Field of Adrenal Function," is best explained by his first sentence: "Many aging scientists have an ever-growing drive to integrate single facts into a whole, which frequently leads to oversimplification." The book provides delightful, stimulating reading well illustrated by apt quotations. It is fortunate that we have such a means of becoming better acquainted with one of the great scientists of our time.—*Lt. Col. P. K. Smith, USAFR (MSC)*

Chronic Pulmonary Emphysema, Physiopathology and Treatment, Modern Medical Monographs No. 8, by *Maurice S. Segal,* M. D., and *M. J. Dulfano,* M. D. 180 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., publishers, 1953. Price $5.50.

The present knowledge of chronic pulmonary emphysema is covered fully in this book, and its classification and development is discussed from a physiologic and pathologic point of view. A separate chapter is devoted to pulmonary function studies and their clinical concepts are well presented. The prevention and treatment of the carbon dioxide intoxication syndrome is described and a discussion of pulmonocardiac complications of chronic pulmonary emphysema is included. Chapters 7 to 13 are devoted to various phases of symptomatic treatment, the use of aerosols, ACTH and cortisone, oxygen, mechanical respiration, and pneumoperitoneum. Anatomic and physiologic phenomena are skillfully described with very good illustrations. There is an excellent bibliography, and the section on methodology increases the value of this monograph considerably. The book is well-written, concise, and valuable to those physicians interested in chronic pulmonary diseases.—*Col. M. E. Groover, Jr., USAF (MC)*

Fibrocystic Disease of the Pancreas, A Congenital Disorder of Mucus Production—Mucosis, edited by *Martin Bodian,* M. D. 244 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $9.50.

The careful analysis of 116 case reports in this monograph forms the basis for the concept of fibrocystic disease of the

pancreas. The tables, graphs, reproductions of pathologic specimens, photomicrographs, clinical photographs, and roentgenograms are unusually good.

Initially, a brief review of the literature by the outstanding investigators in this field is presented to give background for further elaboration and presentation of clinical material. The special study on familial incidence presents strong evidence to support genetic factors as a cause of the condition; the simplest and most likely hypothesis being that of a recessive gene. It is concluded that the eugenic prognosis makes it likely that one in four of each further child of parents who have a child with this disorder will have the same condition.

The chapter on the pathology of the condition is especially well presented. The initial statement that the name of the disease is misleading because of frequent abnormalities in other viscera is strongly supported. The fundamental pathologic changes observed are explained as an inborn error of mucous secretion throughout the body. The disease is defined as a congential "mucosis," because the pathologic lesions have been shown to affect the tissues wherever mucus is produced.

This monograph will be of particular interest to pathologists and pediatricians.—*Col. C. T. Young, MC, USA*

Stress Incontinence in the Female, by *John C. Ullery,* M. D. 149 pages; illustrated. Grune & Stratton, Inc., New York, N. Y.,1953. Price $6.75.

This excellent monograph fulfills the author's purpose of presenting a critical study of the anatomy of the urethra, bladder, and pelvic fascias; the physiology of micturition; the alterations and pathologic physiology that occur to bring on stress incontinence; the methods of diagnosis, and a broad survey of the problems of treatment in a manner that will be of value to the student, general practitioner, and specialist.

The subject matter is divided into seven chapters. About one third of the volume is devoted to the work of numerous investigators in embryology and anatomy of the urogenital system. The detailed findings of these reports are then assembled in an orderly, understandable summary, clarifying confusing descriptive reports from the earliest investigators up to the present. Another outstanding chapter covers all aspects of treatment and discusses in detail all surgical procedures. The author has an excellent, easily read style and has organized his material well. Many of the illustrations are selected from other texts and journals. There is an adequate index and an extensive bibliography. This splendid monograph now provides in one volume all the important data of stress incontinence in the female for the physician who treats this condition.

—*Col. H. E. Harrison, MC, USA*

Multiple Myeloma, by *I. Snapper*, M. D.; *Louis B. Turner*, M. D.; and *Howard L. Moscovitz*, M. D. 168 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $6.75.

In this monograph the authors summarize the existing information concerning multiple myeloma and delineate the defects in our present knowledge of this disease. They also present a series of 97 cases observed over a seven-year period. Many of these patients were studied extensively and the data collected from these studies adds considerably to our knowledge of the disease. Of particular interest is the chapter on the metabolic abnormalities in multiple myeloma in which the nature of Bence-Jones protein and the abnormal serum globulin, as studied in the author's laboratories, is discussed. Although no absolute conclusions are reached, many deductions based on sound reasoning are made. The chapter on treatment is valuable because it probably represents the largest series of treated patients available. Throughout the work, there is a strong clinical tone which will increase the diagnostic capabilities of any reader.

—*Maj. R. B. Schmidt, MC, USA*

Parodontal Disease, A Manual of Treatment and Atlas of Pathology, by *E. Wilfred Fish*, C. B. E., M. D. (Manch.), D. D. Sc. (Melb.), D. Sc. (Lond.), F. D. S., R. C. S. (Eng.). 2d edition. 252 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $6.75.

This volume contains a compact discussion of periodontia, and is an improved version of the 1944 edition. Without intending complete coverage of the field, the author presents his own rationale of treatment, with adequate references to the histologic and pathologic aspects of the subject. The discussion is written in a direct, almost personal manner. The bibliography, common to authors in this country, is deliberately omitted. In its place, each chapter concludes with a concise and helpful summary of the material presented.

The sections of etiology, classification, and treatment are presented reasonably, simply, and directly. There is additional coverage of gingivectomy, including individual case management, complications and difficulties, and the relation of diagnosis to treatment. Most readers will consider the treatment of scaling-curettage too compact, and many might miss the implication that restoration and prosthesis are an essential part of the treatment plan. The atlas of pathology, however, is a miniature gem with clear photomicrographs, particularly in the author's classical exposition of the zones of infection in bone.

"Paradontal Disease" is a good, though brief, practical handbook of periodontia. Through its merits, it earns a definite place on the reference shelf.—*Lt. Col. J. D. Kartman, USAF (DC)*

The Epidemiology of Health, edited by *Iago Galdston*, M. D. 197 pages. Health Education Council, New York, N. Y., 1953. Price $4.

This volume is based on the Eleventh Annual Eastern States Health Education Conference and is a compilation of the contributions of 13 authors. Although their subjects differ widely, all are presented in a manner making them allied to the broad concept of a positive approach to a state of individual or group health. The prime purpose of the work is the establishment of the concept that health is more than the absence of disease. The various presentations are done in a scholarly manner with philosophic considerations of past, present, and future trends in the broad approaches to public health in all its aspects. Its appeal will be largely to the public health scholar and philosopher.

The book is well published, the print is excellent, and the index and references adequate.—*Col. A. P. Long, MC, USA*

Essential Urology, by *Fletcher H. Colby*, M. D. 2d edition. 650 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $8.

The purpose of the author to produce a book for students and residents preparing for the examinations for certification in urology has been fulfilled. This second edition contains many excellent references and is well illustrated by representative photographs of gross specimens, microphotographs, and pyelograms. Statistics are presented in the form of charts.

The text is brief and to the point. The author takes a "middle of the road" approach. This is particularly illustrated by the fact that he covers the four accepted methods of prostatectomy with equal emphasis. A short section on the examination of the urologic patient is included. In addition, he has included the important facts of embryology, anatomy, and physiology in a separate section.—*Col. J. A. Schindler, USAF (MC)*

The Gold-Headed Cane, by *William MacMichael*, M. D. A new edition with a foreword by *James J. Waring*, M. D., and a preface by *William J. Kerr*, M. D., containing the text and illustrations of the 5th edition, including the introduction by *George C. Peachy* and his annotations. 186 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $6.50.

The Gold-Headed Cane was carried successively for nearly 150 years by five distinguished British physicians: Radcliffe, Mead, Askew, Pitcairn, and Baillie. It became a symbol of the power of the physician as it passed from one to another. In 1825 it was retired to the Museum of the Royal College of Physicians in London, but within two years the legend of the Cane was given new impetus when William MacMichael published in autobiographical form an account of the Cane as it journeyed from bearer to another. He brought to the student of medical history a rich account of the customs and practices of the period.

Through the next century the legend of the Cane inspired such men as Sir William Osler, who also embodied the traits of those who had actually carried the Cane. From time to time new editions of MacMichael's work were published, of which the second and sixth, like the first, have become collectors' items. This handsome seventh edition contains the text and illustrations of the notable 1923 fifth edition, including the introduction and annotations of George C. Peachy. In the new Preface, William J. Kerr, M. D., tells how the legend is currently used to stimulate interest in the aspects of a physician's training not directly measurable in terms of grades and scholarship. Each year a senior at the University of California School of Medicine becomes the bearer of a Gold-Headed Cane, an award based upon his interest in the welfare of patients displayed during his entire clinical experience. This edition of *The Gold-Headed Cane,* together with Dr. Kerr's preface, gives new meaning to a legend which has already become timeless.—*M. M. Link, Ph. D.*

Operative Surgery, Volumes I and II, by *Guy W. Horsley,* B. S., M. D., and *Issac A. Bigger,* M. D. 6th edition. 1,579 pages; illustrated by *Helen Lorraine.* The C. V. Mosby Co., St. Louis, Mo., 1953.

The two authors and 18 contributors have ambitiously undertaken in this sixth edition a discussion of general surgery in its broadest sense. There are sections on technic, general principles, anesthesia, vascular surgery, plastic surgery, thoracic and cardiac surgery, abdominal surgery, orthopedic surgery, urologic surgery, gynecologic surgery, and neurologic surgery. The 1,274 illustrations are good, particularly in regard to plastic surgery.

The operations discussed and described are primarily those that have proved to be most satisfactory in the hands of the authors. There is a plea for, and considerable time devoted to, the physiologic approach and individualization of surgical problems. These cannot be considered volumes on surgical technic for, obviously, with such a large field to cover, details of all the operations discussed cannot be presented. The sections on orthopedics, gynecology, et cetera, have been wisely allotted to specialists in those fields; however, they occasionally lose sight of the fact that these volumes are written primarily for the general surgeon, and discuss procedures that would best not be handled by a general surgeon. Although frequent references within the text indicate that recent literature has been fully reviewed, the bibliographies following each chapter are for the most part not up to date.

These volumes are well and interestingly written, and should be valuable as an adjunct to a teaching program. The broad aspects of the subject matter also makes them worth while for reviewing the entire field of surgery.

—*Comdr. R. C. Speir, MC, USN*

Holt Pediatrics, by *L. Emmet Holt, Jr.*, and *Rustin McIntosh*. 12th edition. 1,485 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., 1953. Price $15.

This twelfth edition of the well-known Holt pediatric text series, which was first published in 1896, is really a new book rather than a revision of an old one. Doctors Holt and McIntosh have edited the contributions of 72 contributors into a concise and smoothly written text. The basic organization of the eleventh edition has been retained, but there are 39 more contributors, an improved type, and much new material on fluid balance, antibiotics, and therapeutics. The authors present both sides of controversial material and state where real information is lacking on a subject. They do not burden the reader with confusing speculation, nor mislead him by undue emphasis on unproved theories to which they may be partial. They include enough basic science background to enable the reader to be aware of pertinent laboratory tests and experimental work without overwhelming him with a welter of equivocal or nonessential research data or clinical laboratory technic.

Especially good are the discussions of fluid balance, epilepsy, celiac syndrome, diabetes mellitus, smallpox, tuberculosis, therapeutics of allergic eczema, heart murmurs, and toxoplasmosis, and the graphic description of tuberculous meningitis.

Obviously in a book of this size, which takes five years to write, there will be some ideas with which a reviewer will disagree, and some of the newer ideas in diagnosis and treatment will not have been included. For example, the use of hexachlorophene in a liquid soap or lotion gives better protection against skin infection than cleaning with oil. Preventable skin infection in the newborn may result, especially in hot weather, if the infant's bath is delayed until the cord drops off. Close attention to the umbilical cord is necessary during the first few days to prevent the development of a foul cord.

In view of the many substitutes for pooled plasma, its use is being abandoned because of the incidence of serum hepatitis that occurs even with irradiated plasma. In the discussion of atelectasis of the newborn, bronchiolitis, and croup, no mention is made of the use of aerosol therapy with the alveolar detergent. In the treatment of dehydration with secondary anuria, the logic of potassium administration before renal function has been restored is doubtful. Contrary to the impression given by the book, most strains of *Bacillus pyocyaneus* are only sensitive to polymyxin B internally or to 2 percent acetic acid externally.

In the discussion of tuberculosis, the existence of false positive tuberculin reactions in infants tested with second strength PPD should be noted and the fact the low spinal fluid

chlorides may be helpful in the diagnosis of tuberculous meninigits should be mentioned. In the presentation of renal disease, congenital aplasia of the kidneys in the newborn has been omitted. Many authorities would not agree that the average patient with acute nephritis should be up and around in six weeks, with no attention paid to Addis count.

The treatment of intussusception as outlined may be satisfactory in a large center where the patient can be taken directly from the x-ray department to the operating room in case reduction cannot be accomplished by the barium enema, but might be inadvisable where such ideal conditions do not exist. The use of ACTH and cortisone in the treatment of rheumatoid arthritis in children has been widely abandoned because of the rebound phenomenon. The discussion of the pneumonias is good, but the terminology employed is confusing. Four terms are used for bronchiolitis, and two each for what many call bronchopneumonia and lobular pneumonia. Students would welcome some standardization of terminology.

A young physician might be fully cognizant of the material in this book yet be unable to answer the queries of mothers regarding such homely matters as dressing, feeding, bathing, habit formation, and growth and development of normal children. A chapter or two on office and home practice in pediatrics would be of help in a standard reference like this.

The few faults mentioned are of a minor nature. The book in its entirety is an excellent effort to encompass a vast amount of ever-increasing and changing material within the confines of a limited space. It can be recommended to any person interested in pediatrics.—*Lt. C. M. Trossman, MC, USN*

The Action of Insulin, by *Niels Haugaard*, Ph. D., and *Julian B. Marsh*, M. D. 113 pages; illustrated with graphs and charts. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

This monograph presents a survey of the current knowledge of the action of insulin. There are chapters on intermediary metabolism, chemistry and physiology of insulin, experimental diabetes, diabetic metabolism, the relationship of pituitary and adrenal factors, clinical aspects and mechanism of action of insulin. Pertinent tables, graphs of data, and a good index are included.

This book fulfills the purpose for which it was written. It should be valuable to the clinician and student who is interested in a better understanding of the physiology and chemistry of insulin, and to the research worker as a summary and ready reference monograph. It should be in every library and carefully read by all who prescribe insulin.

—*Lt. Col. S. H. Sandifer, MC, USA*

Atomic Medicine, edited by *Charles F. Behrens*, M. D., Rear Admiral, MC, U. S. Navy. 2d edition. 632 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $11.

This revised edition has been brought up to date and includes many recent developments in the field. It is suitable for the text for a basic course in atomic medicine. The clinical physician will find ample information to guide him in the use of radioisotopes in therapy, one third of the book being devoted to this subject.

This volume has an excellent bibliography following each chapter. The presentation is somewhat episodic but this is not an objectionable feature. The basic physics of the subject is adequately covered.

There are some typographic errors, and more critical editing of individual chapters would have eliminated much repetitious material, particularly in the physical field. One might have expected a much wider divergence of opinion than actually exists among contributors of such diversified experience. The chapters on pathology, hematology, and therapy are complete and factual. Effort is made to clarify many of the false concepts that have come into the field of radiation: Laboratory design and dosimetry as well as the use of isotopes as research tools and the application of more specialized research elements are discussed.

—*Lt. Col. L. E. Browning, MC, USA*

A Practice of Thoracic Surgery, by *A. L. d'Abreu*, Ch. M. 591 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $14.50.

This is the only recent complete work on thoracic surgery embracing all the aspects of surgical diseases of the chest, including their etiology, physiopathology, and treatment. All other treatises on this subject are either out of date or cover operative technics only.

The text is divided into seven sections of 27 chapters and includes chapters on lung function; surgery of the heart, great vessels, and pericardium; angiocardiography; cardiac catheterization; and congenital heart disease. The book is well illustrated and contains an adequate up-to-date bibliography at the conclusion of each chapter. With the exception of four chapters, the book is written by one author who not only reviews his own thoughts and technics, but also discusses all the accepted concepts and surgical procedures on each subject.

This book is highly recommended and should be in the hands of all thoracic surgeons and residents, general surgeons who occasionally deal with thoracic injuries, and internists who require a dependable reference.—*Col. S. W. French, III, MC, USA*

Endocrinology in Clinical Practice, edited by *Gilbert S. Gordan*, M. D., Ph. D., and *H. Lisser*, M. D. 407 pages; illustrated. Year Book Publishers, Inc., Chicago, Ill., 1953. Price $10.50.

This book is a compilation of a series of lectures given by staff members, principally from the University of California. Most of the common problems are presented clearly and frequently are accompanied by illustrations. The discussion is primarily devoted to diabetes insipidus, pituitary tumors, exophthalmos and the use of corticoids. For practical and timely reference there is a chapter on useful endocrine preparations, trade names, and doses.

While the authors claim the text has been written for clinicians, there is almost a total absence of discussion of the anemias in hypothyroidism. Also, there are clinicians who would be more vigorous in the management of diabetic coma than the narrative plan presented. A brief bibliography is given at the end of each subject discussed. The authors accomplished their objective in preparing a book for clinical use, although more complete coverage in the specialty of endocrinology would be desirable.

—*Col. F. W. Pruitt, MC, USA*

Advances in Veterinary Science, Volume I, edited by *C. A. Brandly*, and *E. L. Jungherr*. 431 pages; illustrated. Academic Press, Inc., New York, N. Y. 1953. Price $9.

This book is the first of a proposed series that will review recent advances in medical science as they apply to veterinary medicine. The editors and contributors are authorities in their respective fields. The book includes chapters on animal diseases and human welfare; virus diseases; sulfonamides; antibiotics; the infertility problem in cattle; bovine mastitis; swine diseases; and veterinary public health. The last concerns the veterinary aspects of the World Health Organization and the Pan-American Sanitary Bureau. Each chapter contains an extensive bibliography.

It is the purpose of this volume to provide pertinent information of progress in the more active fields of scientific research that are applicable to veterinary medicine so that it will be of value to students, practitioners,and those engaged in veterinary research. The book fulfills this purpose, and is recommended without reservation. It also would be a valuable addition to the libraries of public health workers and those interested in that subject.—*Lt. Col. K. H. Willers, VC, USA*

Individual and Community Health, by *William W. Stiles*, M. D., M. P. H. 492 pages; illustrated. The Blakiston Co., New York, N. Y., 1953. Price $6.

This volume apparently is written for college students and is designed to add to their cultural and professional knowledge and to help keep them in good health during and after their school years. Historical, statistical, and technical information concerning the widest possible variety of problems related to the field of health is well presented and illustrated.

The author outlines six objectives of health education for college students: the promotion of health and the prevention of disease; the development of a social conscience; the integration of individual and community health; the direction of overt behavior and conduct; preparation to accept responsibility as an individual and as a group member for action leading to the solution of individual and community health problems; and the development of the proper scientific, emotional, and social attitudes toward oneself and one's associates. The subject matter is comprehensive and inclusive, and is illustrated with historical highlights.

The author presents a brief encyclopedia of the more common injuries, diseases, and afflictions of mankind throughout the world, and the importance of prevention of disease and injury. The final chapter presents a resume of career fields in the sciences of health and hygiene, and a short history of advances in these fields from 3,000 B. C. to the present. The references gathered at the ends of the chapter sections are exceptionally well chosen and the index is extensive.

—Col. C. H. Moseley, MC, USA

The Spirit of Man

The public at times thinks of the average physician as a happy mixture of intellectual innocence and worldly wisdom but when that same public is ill it expects from the physician integrity, humanity, and skill. It is precisely because it has not looked in vain for these things that medicine is still an independent group in society, holding its own councils and governing its own members. There is much talk in these days of justifying medicine by its benefits to society, prolonging life and so forth. These things are self evident. The real justification of medicine lies at the deeper level. Its concern has been with the spirit of man, a mission which it shares with religion.

—E. P. SCARLETT, M. D.
in *Canadian Medical Association Journal*

BOOKS RECEIVED

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

Human Embryology, by *Bradley M. Patten,* Professor of Anatomy in the University of Michigan Medical School. 2d edition. 798 pages; with over 1,400 drawings and photographs grouped as 453 illustrations and 2 plates, many in color. The Blakiston Co., Inc., New York, N. Y., 1953. Price $12.

The Troubled Mind, A Psychiatric Study of Success and Failure in Human Adaptation, by *Beulah Chamberlain Bosselman,* M. D., Clinical Associate Professor of Psychiatry, University of Illinois Medical School. 206 pages. The Ronald Press Co., New York, N. Y., 1953. Price $3.50.

Disability Evaluation, Principles of Treatment of Compensable Injuries, by *Earl D. McBride,* B. S., M. D., F. A. C. S., Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine; Attending Orthopedic Surgeon to St. Anthony's Hospital; Associate Orthopedic Surgeon to Wesley Hospital; Visiting Surgeon to W. J. Bryan School for Crippled Children; Chief of Staff to Bone and Joint Hospital, Oklahoma City, Okla. 5th edition. 715 pages; 375 figure numbers. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $15.

Manual of Medical Emergencies, by *Stuart C. Cullen,* M. D., Professor of Surgery; Chairman, Division of Anesthesiology, State University of Iowa College of Medicine, and *E. G. Gross,* M. D., Professor and Head of Department of Pharmacology, State University of Iowa College of Medicine. 2d edition. 278 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $4.50.

A Guide to Human Parasitology for Medical Practitioners, by *D. B. Blacklock,* C. M. G., M. D. (Edin.); D. P. H. (London); D. T. M. (Liver.); Formerly Professor of Tropical Hygiene, Liverpool School of Tropical Medicine, the University of Liverpool, formerly Professor of Parasitology; and Director of the Sir Alfred Lewis Jones Laboratory, Freetown, Sierra Leone, West Africa, and *T. Southwell,* D. Sc., Ph. D., A. R. C. Sc., F. Z. S., F. R. S. E.; Formerly Walter Myers Lecturer in Parasitology, School of Tropical Medicine, The University, Liverpool; Director of Fisheries to the Governments of Bengal, and Bihar and Orissa; Scientific Adviser and Inspector of Pearl Banks to the Ceylon Company of Pearl Fishers; and Honorary Assistant, Zoological Survey of India. Revised by *T. H. Davey,* O. B. E., M. D. (Belf.); D. T. M. (Liver.); Professor of Tropical Hygiene, Liverpool School of Tropical Medicine, the University of Liverpool, formerly Professor of Tropical Diseases of Africa; and Director of the Sir Alfred Jones Laboratory, Freetown, Sierra Leone, West Africa. 5th edition. 228 pages; with 3 colored plates and 120 illustrations in the text. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $5.50.

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The Allergic Patient and His World, Including Sources of Allergens, by *Florence Eastty Sammis,* M. D., M. S. P. H., F. A. A. A., Assistant Attending Physician in Allergy, Nassau Hospital, Mineola, N. Y.; Formerly, Associate in Medicine, New York Post-Graduate School of Medicine, Columbia University; Formerly, Associate Attending Physician, New York Post-Graduate Hospital, Out-Patient Department (Allergy), Formerly, Physician, Allergy Clinic, Out-Patient Department, New York Hospital and Cornell University Medical College, New York City. American Lecture Series, Publication No. 157, A Monograph in the Bannerstone Division of American Lectures in Allergy, edited by *Max Samter,* M. D., Chief, Allergy Clinic, University of Illinois College of Medicine, Chicago, Ill. 156 pages; with pollen charts, maps and photographs, by *Oren C. Durham,* Chief Botanist, Abbott Laboratories, North Chicago, Ill. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $4.75.

The Radiology of Bones and Joints, An Introduction to the Study of Tumours and other Diseases of Bone, by *James F. Brailsford,* M. D., Ph. D., F. R. C. P., F. I. C. S. (Hon.); Hunterian Professor, Royal College of Surgeons, England, 1934-5, 1943-4; Founder and First President of the British Association of Radiologists (now the Faculty of Radiologists); Emeritus Director of Radiological Studies in Living Anatomy, the University of Birmingham; Consulting Radiologist to the Queen Elizabeth Hospital, Birmingham, the Royal Orthopaedic Hospital, the Accident Hospital and the Warwickshire Orthopaedic Hospital, and other hospitals of the City; Active Fellow, British Orthopaedic Association; Awarded the Robert Jones Gold Medal and Prize of the British Orthopaedic Association, 1927, the Roentgen Prize, 1936, Encomienda Order Civil de Sanidad, Spanish Government, 1st Dallas B. Phemister Memorial Lectureship, University of Chicago, Hon . Socio Academia of Surgery, Madrid, Hon. Member University of Bordeaux, Hon. Member Roentgen Societies of Chicago, Detroit, New York, and Texas. 5th edition. 875 pages; with over 725 illustrations. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $19.

Hyperparathyroidism, by *B. Marden Black,* M. D., Associate Professor of Surgery, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, and Division of Surgery, Mayo Clinic, Rochester, Minn. American Lecture Series, Publication No. 173, A Monograph in American Lectures in Endocrinology; edited by *Willard O. Thompson,* M. D., Clinical Professor of Medicine, University of Illinois College of Medicine, Managing Editor, Journal of Clinical Endocrinology and Metabolism; Editor, Journal of the American Geriatrics Society, Chicago, Ill. 119 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

Anatomy and Surgery of Hernia, by *Leo M. Zimmerman,* M. D., Professor of Surgery and Co-Chairman of the Department of Surgery, Chicago Medical School; Attending Surgeon, Michael Reese, Cook County, and Chicago Memorial Hospitals, and *Barry J. Anson,* Ph. D. (Med. Sc.), Professor Anatomy, Northwestern University Medical School; Member of Attending Staff, Passavant Memorial Hospital. 374 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $10.

Emergency Surgery, by *Bernard J. Ficarra,* A. B., Sc. B., M. D., Supervising Editor, Research Professor of Experimental Physiology, Graduate School of St. John's University, Brooklyn, N. Y.; Diplomate of the American Board of Surgery; Associate Visiting Surgeon on Head and Neck Service of John E. Jennings Memorial Hospital; Associate Visiting Surgeon, St. Peter's Hospital, The Hospital of the Holy Family, and Kings County Hospital, Brooklyn, N. Y.; Consultant in Thyroid Surgery, Yonkers Professional Hospital, Yonkers, N. Y. 1,000 pages; 578 illustrations. F. A. Davis Co., Philadelphia, Pa., 1953.

Method and Theory in Experimental Psychology, by *Charles E. Osgood,* Associate Professor of Psychology, University of Illinois. 800 pages; illustrated. Oxford University Press, New York, N. Y., 1953. Price $10.

Symptoms of Visceral Disease, A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine, by *Francis Marion Pottenger,* A. M., M. D., LL. D., M. A. C. P., Medical Director, Pottenger Sanatorium and Clinic for Diseases of the Chest, Monrovia, Calif.; Professor Emeritus of Clinical Medicine, University of Southern California; Author of "Clinical Tuberculosis," "Tuberculin in Diagnosis and Treatment," "Muscle Spasm and Degeneration," et cetera. 7th edition. 446 pages; with 87 text illustrations and 10 color plates. The C. V. Mosby Co., St. Louis, Mo., 1953. Price $7.50.

Lecture Notes on the Use of the Microscope, by *R. Barer,* M. C., M. A., B. Sc., M. B., B. S., University Demonstrator in Anatomy, University of Oxford, Johnston, Lawrence and Moseley; Research Fellow of the Royal Society. 76 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $2.

Films in Psychiatry, Psychology and Mental Health, by *Adolf Nichtenhauser,* M. D.; *Marie L. Coleman;* and *David S. Rube,* M. D. Medical Audiovisual Institute of the Association of American Medical Colleges. 269 pages; illustrated. Health Education Council, New York, N. Y., 1953. Price $6.

The Management of Pain, With Special Emphasis on the Use of Analgesic Block in Diagnosis, Prognosis, and Therapy, by *John J. Bonica,* M. D., Director, Department of Anesthesia, Tacoma General and Pierce County Hospitals; Clinical Associate, Department of Anatomy, University of Washington Medical School, Seattle, Wash.; Senior Consultant in Anesthesiology, Madigan Army Hospital, American Lake Veterans Administration Hospital, Western State Hospital, Northern Pacific Hospital, Doctors Hospital, U. S. Penitentiary, Tacoma, Wash. 1,533 pages; 785 illustrations on 444 figures. Lea & Febiger, Philadelphia, Pa., 1953. Price $20.

Water, Electrolyte and Acid-Base Balance, Normal and Pathologic Physiology as a Basis for Therapy, by *Harry F. Weisberg,* M. D., Assistant Professor of Clinical Pathology and of Clinical Medicine, Chicago Medical School; Clinical Chemist, Mount Sinai Medical Research Foundation and Hospital; Associate Attending Physician, Cook County and Mount Sinai Hospitals, Chicago, Ill. 245 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $5.

Physical Medicine and Rehabilitation, edited by *Basil Kiernander,* M. B., B. S., M. R. C. P., D. M. R. E., D. Phys. Med., Director, Physical Medicine Department, Hospital for Sick Children, Great Ormond Street, London, and Royal National Ear, Nose and Throat Hospital, Civilian Principal Specialist in Physical Medicine, Royal Air Force; with an introduction by The Rt. Hon. Lord *Horder,* G. C. V. O., M. D., F. R. C. P., President, British Association of Physical Medicine. 610 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $12.75.

The Conquest of Plague, A Study of the Evolution of Epidemiology, by *L. Fabian Hirst,* M. D., Lond., with a foreword by Lieut. General Sir *William MacArthur,* K. C. B., M. D., F. R. C. P. 478 pages; illustrated. Oxford University Press, New York, N. Y., 1953. Price $11.

Progress in Neurology and Psychiatry, An Annual Review, Vol. VIII, edited by *E. A. Spiegel,* M. D., Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Philadelphia, Pa. 591 pages. Grune & Stratton, Inc., New York, N. Y., 1953. Price $10.

A History of Psychoanalysis in America, by *C. P. Oberndorf,* M. D. 280 pages. Grune & Stratton, Inc., New York, N. Y., 1953. Price $5.

Compression Arthrodesis, Including Central Dislocation as a Principle in Hip Surgery, by *John Charnley,* F. R. C. S., Consultant Orthopaedic Surgeon to Manchester Royal Infirmary; Park Hospital, Davyhulme; Wrightington Hospital for Surgical Tuberculosis; Part-time Lecturer in Orthopaedics, University of Manchester, with a chapter on Mechanics, by Professor *J. A. L. Matheson,* Beyer Professor of Engineering, University of Manchester, and Histological Observations, by Professor *S. L. Baker,* Department of Rheumatism Research, University of Manchester. 264 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $8.50.

The Ballistocardiogram, A Dynamic Record of the Heart Beat, by *John R. Braunstein,* M. D., Ph. D., Associate Professor of Biophysics and Assistant Professor of Medicine, University of Cincinnati, Cincinnati, Ohio. American Lecture Series, Publication No. 143, A Monograph in American Lectures in Circulation, edited by *Irvine H. Page,* M. D., Cleveland Clinic, Cleveland, Ohio, and *A. C. Corcoran,* M. D., Cleveland Clinic, Cleveland, Ohio. 84 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.

The Year Book of Medicine (1953-1954 Year Book Series), edited by *Paul B. Beeson,* M. D.; *Carl Muschenheim,* M. D.; *William B. Castle,* M. D.; *Tinsley R. Harrison,* M. D.; *George B. Eusterman,* M. D.; and *Robert H. Williams,* M. D. 736 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $6.

A Primer of Cardiology, by *George E. Burch,* M. D., F. A. C. P., Henderson Professor of Medicine, Tulane University School of Medicine; Physician-in-Chief, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic; Visiting Physician, Touro; Infirmary, New Orleans. 2d edition, thoroughly revised. 339 pages; with 214 illustrations. Lea & Febiger, Philadelphia, Pa., 1953. Price $5.50.

Shock and Circulator Homeostasis, Transactions of the Second Conference, October 19, 20, and 21, 1952, Princetown, N. J., edited by *Harold D. Green,* M. D., Professor of Physiology and Pharmacology, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C. 275 pages; illustrated. Sponsored by the Josiah Macy, Jr. Foundation, New York, N. Y., 1953. Price $3.75.

Surgery of the Biliary Tract, Pancreas and Spleen, A Handbook of Operative Surgery, by *Charles B. Puestow,* M. D., Ph. D. (Surg.), Clinical Professor of Surgery, College of Medicine and Graduate College, University of Illinois; Attending Surgeon, University of Illinois Research and Educational Hospitals; Chief, Surgical Service, Veterans' Administration Hospital, Hines, Ill.; Chief Surgeon, Henrotin Hospital, Chicago. 370 pages; illustrated by *Jessie W. Phillips.* The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $9.

Some Conjugated Proteins, A Symposium, by *William H. Cole,* editor. Six lectures presented at the Ninth Annual Conference on Protein Metabolism, Bureau of Biological Research, Rutgers University, The State University of New Jersey, January 30-31, 1953. 73 pages; illustrated. Rutgers University Press, New Brunswick, N. J., 1953. Price $1.75.

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